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ABSTRACT

Educational issues concerning all levels of education in the Republic of Ireland and in Northern Ireland are examined in these 18 conference papers. The focus of the presidential address was on general education in the secondary school. The invited address discussed the aims and objectives in higher education. Papers dealt with the following topics: a sociological analysis of the functions of secondary education; the teacher and political socialization in Northern Ireland post-primary schools; a comparative case study among primary and secondary teachers concerning educational theory and practice; professional status as an operational and aspirational characteristic of the teaching force; the principal's role in secondary education; a survey of teachers in Northern Ireland concerning professionalism and ideology; pupil outcomes; the evolving role of the "Tech" in Northern Ireland education; special education; deficient memory performance in the mentally handicapped; teacher education; technical instruction and the Department of Agriculture; an analysis of the processes used by children to respond to selected mathematical tasks; teachers' viewpoints concerning secondary school mathematics; a study of the mathematical vocabulary of primary school mathematics textbooks; and a praise of oral literature. (RM)

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Notes on contributors

Donal G. Mulcahy, M.A., M.Ed., Ph.D., H.Dip.Ed., is Professor of Education, University College Cork.

Sir Henry Chilver, Vice-Chancellor of the Cranfield Institute of Technology, Chairman of Review Group which produced The Future of Higher Education in Northern Ireland Report (1982).

John A. Wilson, B.A., M.Ed., Ph.D.,is Director of the Northern Ireland Council for Educational Research.

Patrick D. Diggins, B.A., M.Ed., H.Dip.Ed.,is Director of the Teachers' Centre, , Drumcondra, Dublin.

Michael McKeown, M.A., Dip.Ed., D.A.S.E., is Head of Education, Our Lady of Mercy College of Education, Blackrock, Co.Dublin.

Desmond Swan, M.A., Ph.D., H.Dip.Ed., Dip.Psych.,is Professor of Education, University College Dublin.

Ron McCartney, B.Sc., M.Ed., Ph.D., is a Research Officer, Northern Ireland Council for Educational Research.

Jean Whyte, M.Sc., Ph.D., is a Research Assistant in Northern Ireland Council for Educational Research.

H.M.Knox, M.A., M.Ed., Ph.D.,former Professor of Education at Queen's University, Belfast.

Alex McEwan, B.A., Ph.D., lectures in the Education Department, Queen's University, Belfast.

John S. Close, B.Sc., Ph.D., H.Dip.Ed., lectures in St.Patrick's College of Education, Drumcondra, Dublin.

Catherine Mulyran, B.Ed., M.Ed., lectures in St. Patrick's College of Education, Drumcondra, Dublin.

James McKernan, B.Sc.(Ed.)., M.A., D.Phil., lectures in the Education Department, University College Dublin.

Ian F. Wells, B.Sc., M.Ed., Ph.D., Dip.Ed., is Senior Research Officer, Northern Ireland Council for Educational Research.

Kieran R. Byrne, M.Ed., Ph.D., H.Dip.Ed., lectures in the Education Department, Mary Immaculate College of Education, Limerick.

Kathleen Lynch, B.Soc.Sc., M.Soc.Sc., lectures in the Education Department, University College Dublin.

Michael Denny, B.Comm.. M.Ed., H.Dip.Ed., teaches in St. David's School, Greystones and is a tutor in the Education Department, University College Dublin.

Thomas G. Mullins, M.A., M.Ed., H.Dip.Ed., lectures in the English Department, Mary Immaculate College of Education, Limerick.

John Marshall, M.A., H.Dip.Ed., lectures in the Education Department, University College Galway.

General Editor's Comment

The eighteen papers published in this volume represent the continuing policy of the Educational Studies Association of providing a forum for the publication of papers from a wide range of educational studies. As well as including work of experienced researchers and teachers *Irish Educational Studies* encourages post-graduate research students in education throughout Ireland to make available some of their research findings to a wide audience. Articles focus on educational issues both in the Republic of Ireland and in Northern Ireland. Research areas such as history of education and philosophy of education have small representation in this volume while a much greater emphasis is given to curricular and sociological themes, with a cluster of articles focussing on professionalism in teaching.

The growth in educational research in Ireland over the past fifteen years is a most welcome development. It is important that the research is disseminated and discussed. Sometimes questions are raised concerning the relevance or applicability of the research. It is true that some forms of research and research themes have an obvious import for policy and planning while other research seems more remote or esoteric. However, the yardstick of apparent relevance would be a shortsighted one to apply. The deepening of understanding, the creation of awareness, the broadening of mental horizons proceed through various forms of inquiry. They may not all be policy oriented but by raising questions and adding new perspectives people's understanding is enriched and this percolates through the work of educationists in their different tasks.

The lifeblood of education as an area of study is research into traditions and issues affecting education in our society. Ireland needs more of its own educational research studies enlightened as they may be from international research.

What is surprising is the amount and quality of the educational research which is being produced at present with such limited resources. Funds for sponsored research in education are extremely limited in Ireland and the research funds which are available tend to be confined to specific projects closely related to matters of immediate concern. The estimates for the Republic of Ireland's funding of education through the education votes, for the current year, 1982, was £800 million. This is a large scale investment. Yet the funds for educational research as reflected in the item "Research Activities" was only £264,000. Even though about another million could be taken as referring to research under various subheads it is, nevertheless, a worrying reflection of the very low priority research plays in an undertaking of the size and importance to Irish society as the education system.

Post-graduate research students in education are finding the pursuit of such research an increasingly expensive business. Those engaged in experimental research involving questionnaires and travelling for interviews find it particularly worrying. The high costs of postage, documentation and computer use mean daunting problems for research students. Increased typing and presentation costs for research theses as well as increased college fees are added burdens.

Matters of concern to many researchers into the history of Irish education are the inadequate care which exists for archival materials, the vulnerable nature of potentially vital materials, the limited cataloguing and classification which exist and the problems which sometimes exist with regard to access to sources. For a people who pay much overt attention to our past heritage the high level of carelessness which exists with regard to sources for our educational history is indeed regrettable. This was particularly unfortunate at a time of such educational change as witnessed over the last two decades when much material was destroyed or lost.

There has been a good deal of quiet, professional support and co-operation for education research by teachers, departmental officials, teacher union officers, librarians and this is genuinely appreciated by researchers. However, there is a need for much greater awareness of and commitment to the central importance of research for the well-being of our education system in its many facets. This should be reflected in greater financial provision by the state and other agencies so that the necessary educational research can be undertaken and the skills of researchers utilised. This may seem an untimely request at a time of cut-back and recession. But, ironically, it is in such a context that it may be all the more necessary as the temptation to adopt ad hoc planning or short-term solutions needs to be balanced by the calmer and more neutral data of research findings. It is also true that relatively small oulays on educational research can yield great dividends in contributing to qualitative improvement within the process of education.

Policy makers and those professionally involved in education, at all levels, need to be open to research, particularly to the research which relates to their own area of concern or responsibility. On the other hand researchers have a duty to feed back findings into the system by appropriate forms of dissemination and participation. The modes of dissemination should vary for different purposes; the researcher has a responsibility to more than his research colleagues. The unifying bond of all those professionally occupied within the education system should be the concern for the continued improvement of the system for the sake of themselves and the young generations who participate in it. This concern is promoted by the circularity of interest and exchange of ideas between teachers, researchers, policy makers, administrators, the inspectorate, and those involved in teacher education. Educational research is a vital component of this debate and the Educational Studies Association exists to promote both the research and the debate.

John Coolahan

GENERAL EDUCATION IN THE SECONDARY SCHOOL

Professor D.G.Mulcahy

It is just six years now since the first of these education conferences was held in University College, Galway. At that time the talk was of whether the time had not come to explore the idea of holding a conference on an annual basis and possibly even consider the setting up of an educational studies association in Ireland. Many good reasons seemed to exist in support of such developments. They could provide the opportunity for those engaged in research in various aspects of education to read and discuss their work with colleagues; they could promote a greater degree of interaction, on a yearly basis at least, among all of those with an interest in the study of education, North and South, students and more experienced scholars alike; such developments might even mean the publication of a new journal of educational studies in Ireland.

What were possibilities six years ago have long since become an accepted part of our lives, and I would consider it improper if I were not to acknowledge here the outstanding contributions of so many over the past six years in making this possible. Contributions of this kind will, I am confident, ensure the continued success of our Association in the years ahead when we can expect the Association to grow and develop as it sees fit. One of the main purposes of the Association

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over the years has been to develop stronger links between North and South; and for this reason I am particularly happy that the conference this year is being held in Belfast, the second time that it has been held in Northern Ireland. Another central purpose of the Association has been, and always will be, I am sure, a commitment to research and debate on important educational issues of the day. This year, as a departure from previous years, it has been decided that the Presidential Address would take a more extended form, and so I have the honour to address you as President of the Association. It is appropriate, I believe, that the President should have the opportunity formally to address the members of the Association at least once during his term of office, and I should like to take the time and opportunity provided by this occasion to share with you my own thoughts on what is the subject of some of my own current research probings and concerns. They have to do with the rather global but increasingly pressing problem of general education in the secondary school.

I

Addressing the issue of the enormous difficulties facing secondary education the world over in 1979, Torsten Husen drew attention to the central issues in the following terms:

> The 1960s was a decade of exponential growth of educational provision and school expenditures boosted by an almost euphoric belief in education. The 1970s has, under the influence of inflation and zero growth, witnessed a 'headlong retreat' from commitments to education. The school as an

> institution, particularly secondary school, has become the target of heavy criticism. Education has for some time been in a state of crisis of finance, confidence, and _raison d'être_.[1]

Husen, of course was not the first to come to this realization or to attempt to do something about it. In the United States in the 1970s alone many commissions had been set up and had reported on the problems of the high school;[2] in England the Great Debate initiated by the Prime Minister, Mr.Callaghan, in 1976 generated much discussion and also led to recommendations for reform.[3] International organizations such as the O.E.C.D. and the E.E.C. have also become involved in the debate, paying particular attention to the question of the role of the secondary school in relation to employment. And in Ireland, North and South, there is a growing demand for debate and action.

An examination of the literature suggests that there are many reasons for the difficulties being experienced in secondary education. They have to do with financing, with world-wide economic recession and unemployment for school leavers and, perhaps, with disillusionment with the limitations of schooling in solving social problems. But the difficulties of secondary education are also somewhat of its own making I believe; they derive in part from a lack of clarity regarding the purpose and role of the secondary school. Gone is the sureness of purpose which characterized the secondary school idea in the pre-comprehensive era; in its place is an ambiguity of loyalties, loyalty to the classical ideals of the past and loyalty to the pressing practical demands of mass secondary education. I am not looking for a return to the pre-comprehensive era; rather the time has come, I believe, for the development of a new ideal. And it is to a consideration of the broad features of an alternative concept that I wish to turn my attention here.

II

How, then, does one set about developing an alternative concept? Here I propose to develop a concept of general secondary education by turning to a consideration of what constitutes the major demands of everyday living and what these would appear to suggest by way of a preparation for life. I also wish to attempt to argue for greater attention to the pedagogical and practical aspects of general education.

One way of viewing the activities of living is to see them as our way of satisfying the various everyday demands of living. Some of these demands of living are social in origin. Society, for example, expects of us that we adhere to its customs and mores and that we do our bit to promote and sustain its well-being. But demands of living also originate in the individual person. There are basic physical needs or demands to be met, the needs for food, shelter and companionship and higher needs such as the need for acceptance and appreciation and the desire for knowledge and understanding. According to this view, then, when we talk of education as being a preparation for life we are speaking of preparing people to meet various demands of living which have their origins in the person or in society.

What form do these demands take? Undoubtedly there are different ways in which they may be conceived. Here I shall deal with them under four main headings, namely, the vocational demands of living, the recreational or cultural demands of living, the philosophical demands of living, and miscellaneous important practical demands of living. In turning first to a consideration of the vocational demands of living, the question must be asked to what extent the vocational demands ought to be met, if at all, in a programme of general education. Historically secondary education in the tradition of a liberal education has strenuously rejected a vocational dimension. Recent years, however, have seen great emphasis placed on the need for 'career education' or preparation for the world of work, as it is called. Various government agencies and international organizations, for example, now stress the importance which they attach to education of this kind. And rightly so, I believe. For most people today work is an essential part of living. Any form of education which claims to prepare pupils for life, accordingly, must be open to question if it fails to prepare pupils for work in some way.

Increasingly, it is believed that we may be moving into an age in which, due either to shorter working hours or unemployment, we will have available to us more leisure time than ever before. If this is so it has important implications for education to meet the recreational and cultural demands of living. By the recreational and cultural demands of living I mean the need which each of us has for leisure, for rest and for peace and quiet. Historically 'cultural education', if we may so call it, was often associated with the liberal ideal. At the same time schools have frequently had difficulty in promoting education in areas such as music and arts, areas less suited to the 'rational' model of intelligence so dear to the intellectualist's ideal of liberal eduation. But the cultural and recreational demands of living are not bound by any such restrictions and neither ought the curriculum response be bound by a too narrow concept of the cultural.

Turning to what I have called the miscellaneous practical demands of living we are turning, I believe, to that area which has been most neglected in the liberal tradition of secondary education. This neglect is difficult to understand when one considers how all-persuasive the practical element in life is. For life is primarily a matter of doing, of decision-making, of action and goal-seeking. In our daily rounds, be it in earning a living, rearing a family, engaging in physical activities, we are normally engaged in practical activities, that is activities designed to achieve a particular goal, be it immediate or long term.

The neglect of practical education, education which of its very nature has a pressing relevance, is undoubtedly the cause of a good deal of present-day criticism of secondary education. Witness the demands of programmes of pastoral care, career guidance, health and consumer education. Not only does neglect of practical education in areas such as these seriously underestimate the practical character of everyday living but it also fails to recognize that secondary education ought to address itself also in a most concerned way to preparing the secondary pupil to cope with, and indeed master, the distinctive stresses and demands of adolescence.

All of this, of course, is not to say that courses of study found in the more traditional forms of secondary education have nothing worthwhile to contribute towards educating pupils to meet the practical demands of living. For there is undoubtedly some element of transfer from the study of general subjects such as mathematics, science and literature to coping with the demands of everyday living. Nonetheless, the practical demands of everyday living would appear to warrant a much greater direct attention than is allowed to them in the liberal tradition of secondary education. For there is reason to believe that acquaintance and practice specifically in the practical domain itself is necessary if we are to increase understanding and to develop skills in making good practical judgements and in effecting them.[4] Considerations such as these are supported, moreover, by considerations pertaining to the interests and aptitudes of pupils, motivations and relevance. Yet, ironically, not only has secondary education largely failed to provide adequately for practical education, but many of those practices which have grown up with it, some of quite recent origins, are such that they actually hinder the preparation of pupils for meeting the practical demands of living. Here I would include the tendency of secondary education to overemphasize and elevate conceptual and verbal learning out of its due proportion; the tendency, unwittingly, to encourage pupils to postpone undertaking the responsibilities of adult life, a postponement which arises out of prolonged and institutionalized schooling (as one writer has put it very well, it is a dependency generated by schooling, where "students have become used to having their work planned in detail by the teacher hour after hour, day after day, year after year");[5]

and the tendency of formal schooling to promote individualism and competition among pupils at the expense of cooperation and a feeling of community.

I come now to the fourth of the four major demands of living, namely, the philosophical demands of living. Central to the thinking of prominent philosophers of education is the notion that general education ought to enable the person to develop a set of priorities in life, a set of values for the conduct of his daily living, what we might call a personal philosophy. This is no easy goal to achieve, but I believe that since all of us are continually faced throughout our lives with decisions and judgements which entail questions of values that any general education which aims at the broad development of the pupil and a preparation for life is deficient if it does not make a serious effort in this area.

In a way the philosophical demands of living pervade all of the demands of living. As a person thinks about his vocation or career, his dealings with others, how he will spend his leisure, he is in a sense philosophizing, making value decisions. In a sense, too, one's day to day activities and decisions are an expression of a philosophy of life, however unconscious or unstated it may be. And the aim of a general education in this regard ought to be one of assisting pupils to increase their awareness of the values and of enabling them to make informed choices.

I am suggesting then that the idea of secondary education ought to be broadened to include provision for preparing pupils to meet the various practical demands of living. My concept of secondary or general education, in other words, might be said to be a pragmatic or utilitarian one. And so it might be argued that the position which I have been advocating might be considered to be open to the criticism that it neglects important educational values such as personal development, cultural enrichment and the liberating influence of education for its own sake; and that in place of these I have advocated merely practical or utilitarian knowledge and skills such as preparation for employment and other practical activities.

While valid criticisms of the activity analysis approach to curriculum development must be borne in mind these do not necessitate the complete abandonment of such an approach to the question of general education. Modifications of that approach in which account is taken of these criticisms but which still preserve the life-tasks orientation of the approach are possible. Undoubtedly some specific curriculum learnings and activities will have to be identified in order to prepare pupils at any given time and these specific activities will probably become obsolete and reflect certain cultural and moral values. That this is so will make it necessary to review the curriculum periodically in order to take account of new developments in knowledge and changing cultural and moral contexts. But this holds equally true of any curriculum, irrespective of how it has been drawn up.

With regard to the possible criticism that my approach to general education is too pragmatic or utilitarian in emphasis I can be less accommodating; for, to me, this is an invalid criticism. Historically general education in the secondary school has been seen largely as a preparation of life. If the approach to the curriculum of a general education which I am suggesting here can be said to be pragmatic or utilitarian it is because it specifically sets out to be so; it specifically sets out to orient the school to its expressed objective of preparing pupils for life. If this should issue in a curriculum which is considered to be utilitarian or pragmatic in character, then so be it. For if the idea of a general education is to prepare pupils for life, and if a preparation for life necessitates a practical or a utilitarian emphasis in the curriculum, the curriculum of a general education should include such an emphasis. To believe otherwise is not to mean what we say.

III

Discussion of the idea of a general education usually centres on questions of the aims and the subject-composition and structure of the curriculum. But when the discussion goes no further and fails to recognize the implications of teaching and learning for general education the outcome in terms of programmes and courses is likely to be inadequate and restrictive. In the present age of mass - indeed compulsory - secondary education, making successful teaching and curricular provision for the enormously wide range of pupil interests, aptitudes, career aspirations and home backgrounds is a central and fundamental problem in general education. Accordingly, any concept which fails to take account of such is seriously deficient. A second and equally important factor which has come to attention in recent years, and which must also be built into our conception of general education in the future, is that schools also have a peculiar life of their own, giving rise to learnings of a kind of which we have not always been fully aware. And there are other such factors, factors such as the coordination of second and third-level education, the coordination of secondary education and the workplace, and the impact of pupil evaluation and assessment on teaching, learning and the curriculum. Here I shall confine my attention, however, to the questions of individual differences among pupils and the nature of the school as an institution and its implications for the curriculum.

Because proponents of general education in earlier times did not have to deal with the classroom realities generated today by mass secondary education considerations of individual differences among pupils were not always given extensive airing. But to underestimate the individual differences which exist among pupils and to ignore the implications of such differences for the formal curriculum is to ignore a pedagogical consideration which is central and fundamental to the whole enterprise. That is to say that the task with which general education is faced is not simply the selection of curriculum content to meet some idealized notion of the proper content of general education. It is rather to select, organize and present to pupils content and approaches which match their interests, needs and capacities; an environment which recognizes the wide variety in home backgrounds, from those which are supportive and caring to those in which the idea of the school is foreign or those which may be as poor in spirit and interest as they are in material comforts.

It is necessary, of course, to recognize that certain social constraints exist for everyone, and so a consideration of the various demands of living and of the society in which we live emphasise the importance of including elements in the curriculum of a general education which may be 'required' of all pupils. But while there may be more to life than the perfecting of one's own talents or the pursuits of one's own interests, the school must reach out successfully to each pupil and to do this will entail appealing to the individual interests, aptitudes and educational and career aspirations of each pupil. It will mean that the school programme will have to be designed to take account of these matters as well as the pupils' educational backgrounds and achievements and their home backgrounds. It is true, of course, that in practice there is considerable provision for individual differences; and there is a substantial literature supporting this. But the theory of general education as treated by leading exponents has remained astonishingly immune to these developments, giving primacy of place, as it does, to considerations pertaining to the nature and structure of knowledge. And as long as an old and revered concept such as that of general education enshrines such views, practice which is at variance with it will be at a disadvantage.

The failure of traditional theorists of general education to allow for adequate response in programmes of general education to the differences which exist among pupils is based upon a failure to recognize what is essentially a pedagogical point. It is a point which was well made by John Dewey when he argued that curriculum content in and of itself is of no intrinsic educational value; it is of value only when it is such that those to whom it is 'presented' can grow and benefit from interacting with it. As he was to put colourfully:[6]

> It is no reflection upon the nutritive quality of beefsteak that it is not fed to infants. It is not an invidious reflection upon trigonometry that we do not teach it in the first or fifth grade of school. It is not the subject per se that is educative or that is conducive to growth. There is no subject that is in and of itself, or without regard to the stage of growth attained by the learner, such that inherent educational value can be attributed to it.

It is precisely this point which is overlooked by those who insist on essentially the same type of curriculum fare for all pupils - and here I include those, such as Phenix, who insist on discipline knowledge only, or Hirst and Peters[7] who insist on all pupils being faced with a diet which includes all of their celebrated forms of knowledge - when they set about justifying curriculum content on the basis of considerations of 'what knowledge is of most worth' in itself, and without adequate consideration for the pupils for whom it is supposed to be of worth. Pedagogically speaking, the question of pupils' receptivity towards whatever content is finally chosen is an essential input into the deliberations regarding what is to be the content of general education as a preparation for life.

Closely related in many ways to the question of individual differences among pupils is the question of the impact of the school as an institution on teaching, learning and the curriculum. Recent years have seen a much greater awareness of this factor and its pedagogical implications largely in the form of the so-called hidden curriculum. Historically educationists from Plato to Newman have always assigned special importance to the personality of the teacher in the educational process; now it would appear that this same importance ought to be attached also to the 'personality' of the school and its hidden curriculum.

The hidden curriculum is taken here to mean all of those learning situations which are largely a side effect of the nature and purposes of schooling. These include, for example, such learning situations as arise from pupils mixing with one another, from the interaction of pupils with adults and those is authority, from the isolation of the school from various activities of the broader community, and so forth. Some have spoken of the hidden curriculum as being more fundamental and important even than the formal curriculum, containing as it may attitudes, beliefs and values on a wide range of issues, including learning and schooling itself. Thus, while at school pupils may learn not only the formal curriculum but also a whole host of collateral or concomitant learnings from peers and teachers. Some of these may be highly valuable and desirable; others undesirable and even counter-educational.

Chief among those aspects of the hidden curriculum of schooling which have attracted attention as being among the more undesirable and anti-educational is the degree of isolation of the school from the wider community, the modes of communication and instruction which are employed, much of the paraphernalia of schooling which are only peripheral to its declared purposes, (such matters as the compartmentalization of knowledge, the restrictions of the timetable and the trappings of examinations, credits, records, and the like), the enforced nature of much of post-primary schooling, the elements of competition it entails and its preoccupation with formal studies. What is of greatest importance in all of this from the pedagogical point of view are the images of schooling and learning which these features of schooling create for the pupil and the impact which, along with the formal or public curriculum, they have on pupils in terms of motivation and pupil perceptions of its relevance to them in their lives today and as a preparation for their lives tomorrow. Whatever the precise effect of factors of this kind on the perceptions and motivations of young people they need to be taken into consideration in any reconceptualization of general education in the secondary school.

I have been arguing that the problem of the curriculum of a general education cannot be reduced to the question of the formal content of the curriculum alone. Central to the position which I am setting forth is the view that the reconceptualization of general education must entail a concept which will allow pedagogical principles as much play as considerations having to do with other determinants of curriculum content - be it a consideration of the nature and structure of knowledge or considerations, such as I advocate, having to do with the major demands of living - when it comes to the design and implementation of programmes of general education. If the thrust of much writing on this topic in recent years is any indication, it suggests the introduction of many new and even untried elements into programmes of general education, and the dropping of others which have had a long association with secondary education. Those elements most likely to provoke controversy will be those at odds with the long established view that the curriculum of general education ought to be based primarily if not exclusively, upon the scholarly disciplines; the widespread introduction of work-orientation programmes into programmes of general education; and perhaps most notably of all the gradual sharing of the work of the school with other agencies in society.

The wider role for the school and other institutions will not be without its difficulties; but it appears to be the most realistic way forward at this juncture if the world of education is to regain contact with the wider community from which it has allowed itself to become increasingly cut off. Neither should the difficulties be over-emphasized for some progress has been made in areas such as work-placement for school-going pupils as part of their general education. Perhaps progress would be greatly aided also if there could be a willingness to ease certain legal constraints on schooling by means of granting certain legal immunities to teachers in such areas as pupil evaluation, the use of teaching materials, and the expressing of personal, political and religious views. For such are the legal constraints on schooling at the present time that they frequently serve to impede the school from presenting anything other than a highly 'censored' image of the 'real' world.[8]

IV

It is time now to draw together the foregoing considerations with a view to summarising what I am proposing by way of a reconceptualization of general education for the secondary school. As understood here, general education is broader in scope than the traditional concept of secondary education. A widening of the idea is necessary, I believe, because general education understood as a preparation for life and all-round development of the pupil ought to take account of the many and various demands of everyday living and provide a curriculum which responds to the needs to prepare pupils to meet these demands. Accordingly, I have suggested that a general education ought to recognize that in today's world it is generally required of adults to engage in productive work and to earn a living. The idea of a general education must also be sufficiently broad as to cater for many of the other practical demands of living. Whether demands of living of this kind can best be provided for through means of the formal curriculum or by means of paying appropriate attention to aspects of education such as school organization, programmes of pastoral care and guidance, programmes of health education and the like, may well be an open question. What must be insisted upon, however, is that adequate recognition must be given to a broad range of practical demands of living in any curriculum of general education. And a place of importance must also be retained for preparing pupils to cope with the recreational and philosophical demands of living.

Turning to the question of the pedagogy of a general education, according to the view adopted here general education intended as a preparation for life must address itself to the needs of all pupils, and all the more so since pupils are attending in greater numbers and across a wider range of abilities and socio-economic backgrounds. Traditional appeals to a highly intellectual form of education for all pupils must be tempered, radically in some cases, by the actuality of pupil interest, motivation, aptitude and education achievement. Accordingly, programmes will need to be varied and shaped very differently for different pupils.

And sight must never be lost of the possible negative effects of various aspects of the so-called hidden curriculum of schooling, including factors arising out of the prolongation and institutionalization of formal general education itself or its sometimes cold unawareness of the private world of its less privileged pupils.

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AIMS AND OBJECTIVES IN HIGHER EDUCATION

Sir Henry Chilver

The Educational Studies Association of Ireland has traditionally devoted many of its annual conferences to the problems of schools and of teacher education in Ireland. This is to be greatly applauded, because so many of the major problems of society are crucially dependent on school education. Indeed there are some who would argue that, unless school education is "right", there is little to be said for later forms of education. But I suspect the success of education generally in a society depends on success at many levels, including higher education. In this paper I would like to explore some of the major issues facing higher education, not only because there are changes afoot in Northern Ireland itself, but also because a wider appreciation of higher education is vital in any modern society.

Higher Education in Context

In exploring the field of higher education, it is vital to see higher education in context. Context is important because, in many countries of the world, debates on higher education are taking place in the shadow of public expenditure cuts. These debates frequently become defensive and parochial, and they lose sight of broader issues. In looking at higher education in context, we could approach this in a number of ways:

for example, we could consider higher education in relation to further education or school education, again, we could consider it in relation to other "areas" of the public services, as for example social and welfare services. It is most profitable to approach context through a glimpse at the world scene of higher education.

Higher Education on the World Scene

On the world scene we immediately run into "definitional" problems to make sensible comparisons - a reminder that the definition of higher education is always very complex. If we regard higher education as formal education at the higher levels of post-school education, then on the world scene generally higher education is strongly vocational. One important reason for this is that most Governments see higher education as a powerful force in economic development and change. Higher education in the world generally is an important part of national policies of economic growth. For this reason higher education is often technology and technocrat led. But this does not mean that non-technological and non-scientific studies have been suppressed. Indeed, on the contrary, some modern technological societies deploying their material wealth have developed major intellectual centres in the arts as well as the sciences.

Within the world scene, there are many different national systems of higher education. In North America there is a great diversity of institutions; there are complex mixtures of public and private funding. In society generally, higher education is seen as an important social, cultural and economic force. In western Europe generally, systems of higher education are essentially public-funded, with strong elements of central direction. The structures of higher education are fairly rigid and the response time to change is quite long, with the result that evolution is frequently achieved by setting up new types of institutions, examples of which in Britain are the polytechnics and the Open University. The Japanese system appears outwardly to be highly centrally directed, but, on closer study, is seen to be a mixed system of public and private institutions. The higher education system reinforces strongly the national industrial policy of Japan. Of the order of 50 per cent of young people go on to "university", and there is open talk of a national objective of 100 per cent during the 1980's, with a strong orientation to technology and science.

Amongst advanced industrialised countries, students - as opposed to institutions - are funded in a variety of ways, as exemplified in their student-grant and student loan systems. Many of these systems involve considerable commitments by students individually to finding at least some part of the finance themselves for their courses.

At the other end of the economic spectrum, amongst developing and newly-industrialised countries the systems of higher education are superficially modelled on Western European and North American patterns. In such countries, policy towards higher education is based essentially on the role of higher education in economic development. This has meant that higher education is frequently led by technology-based subject areas, aimed at developing indigenous centres of technological know-how in those countries.

Prospects on the World Scene

During the next two decades, the greater part of the world's population will pass through only the initial phase of what we - in the West - know as modern industrialisation. During this phase, vocational higher education will be in great demand, but in its wake will come broader concepts of higher education. This movement offers one of the greatest opportunities for raising standards of education generally on the world scene. The world growth of higher education will embrace many cultures that are not western based and for this reason alone the prospects for higher education on the world scene are full of interest.

Observations on the World Scene

We can make a number of general observations on this world scene of higher education. There is a great diversity of systems of higher education, and, within those systems, increasing diversity of institutions. Some highly centralised systems are successful, some de-centralised systems are successful. Some wholly state-controlled systems work well - others not so well. There is almost certainly no unique way of achieving success in higher education in any society.

On the world scene generally, centres of higher education are seen not as "repositories" of esoteric knowledge, but as sources of the highest levels of ideas and skills that can be deployed in the society generally. In the less economically-developed world, higher education is seen as a force to achieve both personal betterment of students, and "economic" growth of the community. In the more economically-developed world, much the same has applied during the past 100 years or so. But as the pursuit of material wealth - for its own sake - has become increasingly questioned, so these principles have come under increasing attack. And this has led to major re-appraisals of the role of higher education in many highly industrialised countries.

Prospects in Western Europe and North America

On the world scene, Western Europe and North America are closely linked - culturally and language-wise. On both continents, institutions of higher education are becoming increasingly diverse, and the prospect is they will continue to do so. There has been a progressive movement towards broader education at school, both as a base for higher education and for employment generally. In spite of present disruptions, there has been a progressive movement towards increasing amounts of higher education; in this process, the styles of higher education are changing, both immediately post-school and in the later careers of students. There is progressively more interlocking between institutions of higher education and society more generally. As diversification develops, and as higher education becomes more sophisticated,it becomes increasingly difficult to define (in all these countries) the respective roles of central government, regional or local government, the institutions and the students themselves.

Prospects for Britain

In looking at prospects for higher education in Britain, it is important also to see higher education in the context of education as a whole in Britain. Over the whole range of education in Britain - school, further education and higher education - the major problems in Britain today are in two areas.

The first is in the initial post-school period. Less than half of the 16-plus population in Britain in 1980/81 was undergoing full-time education. Of the 16-plus age-group, nearly a quarter in 1980/81 were unemployed or on the Youth Opportunities Programme, and the employment situation is growing worse. About a third of the age-group in 1980/81 were in employment, but only a quarter of these were receiving part-time further education. These figures are disturbing, and they expose the weakest flank of education in Britain, at the boundary between school and employment. The 16-plus generations of today will play key roles in the society over the next two decades. It is difficult to see how the continuing growth of a modern industrialised country can be sustained with such a low level of further education amongst key generations of young people.

The second major problem is in schools themselves. In school education, the prospects for everyone are greatly improved if we can genuinely broaden the basis of the school curriculum. The university dominance of school curricula has led to over-specialisation in a world which changes so rapidly that breadth of school education is essential if young people are to have the necessary flexibility to fulfil their later roles.

Against this background, I believe there is the prospect of major developments in school and post-school education in Britain. Post-school education will involve many styles and many institutions: national, regional and local. The main thrust in post-school education will be the further and indeed higher education of young people to enable them to develop their working lives more effectively, at a time of rapid change in industrialised society. For this reason, I believe post-school education will be strongly vocational.

Higher Education Generally

Within the totality of post-school education, what is the prospect for higher education? Before we examine the prospects, we much remind ourselves what higher education is about. It is all too easy to concentrate discussion on organisation and structure.

Within the totality of post-school education, there will be scope for some institutions which are not so much "repositories of knowledge" as centres in which ideas are generated. Higher education - if it does anything at all - is at least a vital part of the "ideas-generating" fabric of any society; this may emerge in a variety of ways, such as advanced teaching and research. And I don't use the concept of "ideas-generating" simply in terms of science and technology. It is a broader intellectual activity, embracing the arts as well as the sciences. "Ideas generation" is a dynamic process, and is not concerned simply in developing "repositories of knowledge". There is international currency in "ideas", and they can be transferred from scholar to student, from one institution to another, from one country to another. In our time, Japan has shown that "ideas" can be imported to achieve very great industrial innovation.

We need to give much more thought to the personal development of students in higher education. What are the general objectives of individual students? I believe (for economic and socio-economic reasons) we shall become less dilettante and will need to be concerned increasingly with the relevance of higher education in the general career development of (particularly) young people.

So far as institutions of higher education are concerned, these institutions will develop more mixed economies. They should be "multiply-funded" by various departments of Government, by students, by industry, commerce and other relevant sources. Institutions should be given maximum flexibility in the deployment of resources. Deficit funding should give way to "geared" funding - those institutions being geared which show the greatest success in achieving set objectives.

So far as Government is concerned, we must sort out the confusion over centralisation and regionalisation. "Central steers" are needed on such matters as:

(1) The overall purposes of post-school and higher education;
(2) A simplified school and early post-school examination system;
(3) The efficient use of resources .

The role of Government in higher education is to help establish a framework on which a diverse range of changing institutions can evolve. Central planning should offer optional lines of evolution at all times. There is much in the almost cynical advice of Edmund Leach, who, after considering very carefully the role of the "planner" in the modern world, once said that his thoughts led "to the quite uninspiring conclusion, that, in any field you care to mention, the role of the planner is not to design a masterpiece, but to try to reduce the significance of irreversible mistakes".

Having said all that, I believe the prospects for higher education are exciting. The real prospects should not be masked by the problems of today's cuts in public expenditure. For all these reasons, the prospects for higher education are of increasing diversification. There will be increasing interlocking between higher education and other centres of society which are also ideas-generating. There will be more vertical institutions of higher education, spanning an increasing range of levels of post-school education. Institutions of higher education will be looking for new international roles; collaboration at international level will go beyond exchanges of students and staff, and into joint degrees, joint research studies and even joint centres. The prospect is that, within the next two decades, a conceptual level of higher education will emerge which gets above the purely nationalistic problems of higher education in any single country.

In Britain, we should be prepared to experiment with greater personal commitment of students themselves to higher education, through loan schemes and in their having a greater say in the choice of courses and institutions. The prospects would be greatly enhanced if higher education can brush off its present gloomy and introspective mood, and look to the challenges that are developing around us, particularly on the international scene. My own view is that Britain is best equipped in higher education not if it has a master detailed plan, but if it has some broad educational objectives, and a framework on which it can evolve in alternative ways in the face of changing situations which we cannot identify in detail at this stage. Central planning should direct its efforts to that framework; it should ensure that the framework is one within which the increasing range of institutions can respond flexibly to a rapidly changing social scene.

Prospects in Northern Ireland

It is against this general background that we must also look at higher education in Northern Ireland and indeed in Ireland generally. Although the Northern Ireland scene has not been without its special social and economic problems, many of the general trends in higher education apply as much to the Province as to the rest of Ireland and the world more generally.

There is a strong tradition of higher education in Northern Ireland and higher education attracts proportionately more young people in Northern Ireland than in other parts of the United Kingdom. There are strong centres of excellence and a diversity of styles. But the system set up in the Province at the time of the "Robbins" expansion of the 1960's was on relatively traditional lines.

The need for higher education in the modern world is to be diverse and flexible. A particular problem for Northern Ireland is the concentration of population in Belfast. Much of higher education is concentrated of course within the metropolitan area of Belfast. Any developments of higher education in Northern Ireland must ensure a wider geographical spread of higher education in the Province, serving particularly those in the North-West of the Province.

The recommendations of the Higher Education Group for Northern Ireland were of course based on these broad principles. There is a need for a strong and active centre of higher education in the North-West of the Province. Teacher education should not depend wholly on Belfast-based institutions. These broad aims can be achieved in a number of ways, and the options are spelt out in the report of the Review Group.

The choices between some of the options are finely balanced. Government has concurred that there is a need for a new institution in the North-West. Government's view is that this new institution should bring together the New University of Ulster and the Polytechnic in a new role.

On balance, the Review Group favoured a new institution in the North-West, wholly independent of Belfast, on the grounds that Belfast-dominance is avoided best by independence of Belfast institutions. The challenge for Government, New University of Ulster and the Polytechnic is to create a new institution which while continuing to strengthen the role of the Polytechnic in Jordanstown, also genuinely establishes a strong presence of higher education in the North-West. It is also vital that the new institution does not follow the course of more recent new universities, which have neglected non-degree work in their pursuit of first-degree studies.

So far as teacher education is concerned, Government has expressed a resolve to bring together more effectively teacher education in the Belfast colleges. This is a very challenging problem. A closer working together of the colleges of teacher education could make a major contribution to the scene in Northern Ireland, both educationally and more widely. But it is so easy to draw the wrong conclusions about the implications of closer working together, in a social scene which is so tense. In this situation, Government, the Colleges and the community generally, must be patient in giving time for a new spirit to evolve, and for educationalists to see the major contribution they can make to the scene in the Province.

Conclusions

In conclusion I think that higher education worldwide is in a state of change. In these changes, we have much to learn from other countries, as well as from the established centres in our own countries. In these changes, we have an opportunity to identify the basic purposes of higher education, which must be concerned - at the end of the day - with the development of ideas and skills of young and (indeed) mature people. Such a principle is close to the heart of the Educational Studies Association.

A SOCIOLOGICAL ANALYSIS OF THE FUNCTIONS OF SECOND LEVEL SCHOOLING

Kathleen Lynch

Introduction

The purpose of this paper is twofold: it is a sociological analysis of some of the officially declared, and the unofficially realized, functions of second-level schooling at the present time. With regard to the officially defined purposes of second-level schooling an analysis and critique of cognitive competency as an educational goal is presented. Although cognitive competency is undoubtedly a desirable end in itself, the point of contention here is that it is too narrowly defined within the school system The attainment of cognitive competency in knowledge systems, (subject areas), is based on the assumption that these systems are static and reified entities. It is, of course, accepted that changes do occur within the cognate disciplines but the ramifications of such changes are interpreted as being of significance only within the confines of the discipline itself. The main point of argument here, however, is that knowledge systems are not just internally dynamic entities, but also socially situated entities. As such, their selection, presentation, organization and evaluation in schools, and their utilization outside of schools, all have social significance. The focus of interest, therefore, is on how the eventual utilization of

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knowledge systems has significance for the understanding a pupil attains within a subject area. The attainment of cognitive competency in reified subject areas is, therefore, inadequate as an educational goal. It means that both the subject (the knower) and the object of knowing (the known) are regarded as abstracted from social life because as Karl Mannheim has pointed out:

> Unsociological educational principles are from the outset disposed to produce what Hegel would call the 'unhappy consciousness' - 'unhappy' because the too elevated, too abstract promises inculcated by its artificial education render its owner incapable of mastering the conflicts which are the stuff of real life; he tends to feel at home only when dealing with the possible, the potential, and to discount all reality as a priori bad. (1952, p.232).

What is needed therefore, is not so much new subjects or the re-organization of existing subjects, but a new perspective within each subject sphere; one which incorporates the social dimension in understanding.

The second major section of the paper is also devoted to an analysis of officially declared goals of schooling: the transmission of certain knowledge systems. The principal issue addressed here is why certain knowledge systems have gained increased curricular preeminence in recent times. It shall be argued in this context that the definition of what is 'valuable knowledge' is increasingly contingent on the immediate economic utility of the given knowledge system.

The final part of this paper is an analysis of some of the sociopolitical functions which second-level schooling implicitly serves. The first point of contention here is that Ireland is no different to

Britain, the United States and Western Europe in the failure of educational reforms to effect a more egalitarian society. Extensive studies in the United States and Britain, for example, show that despite constant improvements in the educational system generally, social inequalities persist (Bowles and Gintis, 1972; Goldthorpe et al., 1980; Halsey, Heath and Ridge, 1980; Jenks et al., 1972; Ogbu, 1978). Likewise in Ireland, there is evidence, albeit not as extensive as in other countries, that free education and other educational reforms have done little to eliminate social inequalities (Rottman and Hannan, 1981). Neither has it altered class based differentials in rates of retention (Clancy and Benson, 1979, pp.13-31) and levels of performance (Fontes and Kellaghan, 1977, p.17) in our schools and colleges. The main task of the second section therefore is to explain both why and how second level schools fail to eliminate social inequalities. Indeed, it shall be argued here that schools actively perpetuate inequalities in certain respects.

Cognitive Competency in Specified Subject Areas as an Educational Objective

In 1977 John Heywood pointed out that Bloom's Taxonomy of Educational Objectives, especially Book 1 on the cognitive domain, "had a profound influence on recent developments in second-level education" (1977, pp.16,17) in Ireland. The critique of the Leaving Certificate Examination by Madaus and Macnamara (1970) was, of course, directly based on Bloom's Taxonomy (Book 1). In its unquestioned acceptance of the primacy of cognitive development (chapter 3) as an educational goal it set the stage for further educational development at second-level in the 1970s. Modes of assessment were revised subsequent to the report in order to assess the pupil's entire range of cognitive skills. Prior to this the Investment in Education Report (1966) had highlighted the need for a change in curricular provisions at second-level: greater attention needed to be devoted to the natural sciences, business related studies and practical subjects. Thus, (it would seem that) while the range of desirable knowledge systems were specified by the Investment in Education Report, the desired intellectual competencies to be attained within each of them were specified by Madaus and Macnamara's work. The premisses on which each of these ideals is based are the ones that I now wish to subject to analysis. It is to be the issue of cognitive/intellectual competency that I shall first direct my attention.

The cognitive domain "includes those objectives which deal with the recall or recognition of knowledge and the development of intellectual abilities and skills" according to Bloom (1956,p.7). He holds, of course, that these intellectual skills can be further classified on a hierarchial basis ranging from 'knowledge' to 'evaluation' (1956, p.18). A number of problems emerge, however, when such a taxonomy is used as a basis for an entire educational programme as has happened in Ireland. First of all cognitive competencies are only one domain within the sphere of educational objectives as Bloom himself admits (1956,p.7). He points out that the 'affective' and 'psychomotor' domains are two other readily identifiable dimensions. Neither does he attribute primacy of place to the cognitive as an educational goal. Indeed it seems to be pragmatic rather than strictly educational considerations that led to the development of a taxonomy in this sphere in advance of others:

> This (the cognitive domain) is the domain which is most central to the work of much current test development. It is the domain in which most of the work in curriculum development has taken place and where the clearest definitions of objectives are to be found phrased as descriptions of student behaviour. For these reasons we started our work here. (1956,p.7).

To delimit the educational experiences of second-level pupils to those assessable in the cognitive sphere (as defined by Bloom) is, therefore, to circumscribe their development to an inordinate degree. The extent to which this is happening in second-level classrooms is well documented by Raven's (1975) study. His research clearly indicates that most of the teachers' and pupils' time in second-level schools is devoted to the teaching and learning of materials designated for assessment in public examinations.

A second problem arises, however, from the principles on which the taxonomy of cognitive objectives is based. Bloom holds that 'the principles' on which the taxonomy were based were 'educational', 'logical' and 'psychological'. (1956, p.6). These are undoubtedly necessary conditions for its development though they could not be regarded as value-free judgments as Bloom (1956, p.6) wished them to be. Although the philisophical, psychological and sociological assumptions on which Bloom's (1956) thesis is based are not fully explicated in this work there is sufficient evidence to show that they fall within, what Eggleston (1977,p53) calls, the 'received perspective': Curricular knowledge is taken as having an "essential nature" and is seen as giving "fundamental understandings". (Eggleston, 1977, p.53). In the cognitive domain fundamental understanding connotes not just the acquisition of knowledge per se but the development of "intellectual abilities and skills" which the individual "can bring to bear on new problems and situations" (Bloom, 1956, p.38). There are two assumptions, therefore, underlying Bloom's taxonomy which merit comment: one an assumption about the nature of knowledge and the other an assumption about the transferability of learning. I shall address the latter issue first.

Bloom himself adverted to the lack of substantive evidence proving the transferability of cognitive skills learned in one situation to any other situation:

> We have ... attempted to organize some of the literature on the growth, retention and transfer of the different types of educational outcomes or behaviours. Here we find very little relevant research. For the most part, research on problems in retention, growth and transfer has not been very specific with respect to the particular behaviour involved. (Bloom, 1956, p.23).

More recently, similar reservations about the transferability of learning have been expressed in a philosophical context by Paul Hirst (1974). He points out that even if forms of thinking can be satisfactorily defined, "it remains to be shown that each one of them demands the exercise of one distinct but general ability and that this ability can be developed by study in one particular area of human learning." (Hirst, 1974,p.37). Furthermore, he highlights the fact that there is very little evidence on the transfer of training and that what there is "suggests that it occurs only when there is marked logical similarity in the elements studied." (1974, p.37).

Applying a similar logic to the Irish second-level situation it seems highly debatable, therefore, that cognitive skills learned in specific subject areas will be immediately available to an individual to resolve issues in totally unrelated cognate spheres. Moreover, as Jencks (1972, p.89) has pointed out, one of the most astonishing features of the whole situation is that "virtually no research has been done" on how effective schools actually are in transmitting cognitive skills in the first place. It may indeed, therefore, be presumptuous to talk of the transferability of cognitive skills at all.

The second assumption underlying Bloom's thesis, and thereby underpinning much of Ireland's educational practice at second-level, is a particular concept of the nature of knowledge. (The following discussion is probably more applicable to some second-level subjects than to others, for example the natural and applied sciences rather than languages). Knowledge of a phenomenon generally connotes two processes in Bloom's terms: Firstly, it involves being able to recall or recognize the phenomenon with which one has had experience in the educational process (Bloom, 1956, p.28). Secondly, it involves "the more complex processes of relating and judging" (1956, p.29). It involves having 'understanding' therefore, and not just the ability to recall. Bloom's conception of understanding, however, is not a socially situated one in any complete sense, although he does admit that "knowledge is always partial and relative rather than inclusive and fixed." (1956, p.32). When I speak of the understanding of a phenomenon having a social dimension I mean not just an understanding which incorporates causal and existensial dimensions as, for example, Freire suggests is necessary for critical thinking (1973, pp.41-58), but also one which incorporates a consequential or utilization dimension.

My assumption here about the nature of knowledge is based on an understanding of the social foundations of knowledge derived, in part, from Mannheim. Mannheim contested that "mental structures are inevitably differently formed in different social and historical settings." (1936, p.238). I would suggest, as a corollary to this, that mental structures (knowledge systems) are not only socially situated in their formation but also in their utilization. Knowledge of a phenomenon, therefore, must not be presented as the understanding of a reified object fixed in meaning because knowledge systems are socially dynamic both in their construction and utilization. The comprehensive understanding of a phenomenon must, therefore, incorporate a social dimension: it involves having a knowledge of how a phenomenon is socially constructed and utilized. In particular, I wish to draw attention to why the eventual utilization of knowledge systems has significance for the understanding a pupil attains within a cognate area. Its significance rests on the fact that the principal issues facing our society today are those arising from the modes in which knowledge systems are utilized: it is not our inability to produce knowledge which precipitates the major economic, political and social problems which confront us, for example, unemployment, loneliness, pollution and starvation. Rather, it is the use and abuse of the knowledge systems which we already possess, and indeed continue to develop. It is my contention, therefore, that an awareness of collective interdependence (and perhaps ultimately a sense of collective responsibility) cannot easily develop in a society that educates people to perceive phenomena independent of their social construct and effect. What this means, therefore, is that the need for educational change at second-level does not centre so much on the range of subjects in the curriculum, or the nature of their organization, (i.e. whether they are integrated or treated as isolated disciplines), but rather on the concept of understanding on which they are premissed. What Hirst (1974) so rightly remarked in respect to the neglect of moral and practical problems in schools, could also be applied to the closely related social realm. He pointed out that certain traditional curriculum subjects, such as mathematics and physics, which were based on "one distinct form" ignored practical and moral considerations. However, so did subjects such as geography and English which were much more "multiform" in character. (1974, pp.143-144). There is nothing inherent in the logic of freer forms of curricular organization, therefore, which will guarantee either a moral or socially situated understanding of any given phenomenon.

Why Certain Knowledge Systems have attained Curricular Pre-eminence

Having analysed some of the assumptions underlying the educational objective of cognitive competency, I now wish to address my attention to the range of knowledge systems currently incorporated in the second-level curriculum. The twenty-two junior cycle and thirty-one senior cycle examinable subjects on the second-level curriculum give us a good indication as to what is defined as 'valuable knowledge' in Irish education. As Popkewitz (1981) pointed out in a recent article:

> The school curriculum reflects what influential groups of people can establish as social priorities. Citizenship education, back to the basics, and discipline-centred curriculum movements, no matter how noble their purposes, are political endeavours of groups trying to achieve their emphasis on particular social knowledge. (1981, p.198).

That such struggles for the definition of curricular purposes are taking place in the Irish context is clearly documented in John Coolahan's recent work: scientists, industrialists, artists, parents and politicians are all seeking to redefine the purpose of second-level schooling in line with their own particular interests. (Coolahan, 1981, p.205). It would seem, however, from the nature of curricular expansion in recent years that it is the business and scientific sectors which have succeeded most in defining what is appropriate educational knowledge at second-level. This has been particularly evident in the changes incorporated in the curricular provisions of the senior cycle over the last fifteen years. As can be seen from Tables 1 and 2 below the most notable curricular expansion in second-level has occurred in the applied sciences and business studies during this time.

I am aware of course that the provision of educational services does not ensure their consumption as Donal Mulcahy has recently pointed out (1981, p.39). However, there is evidence that the business, scientific and technical subjects have been subscribed to at increasingly high rates at second-level, especially among the senior cycle pupils between the years 1973 and 1980.

TABLE 1

A Comparison of Recognised Curricular Subjects for the Junior Cycle of Secondary Schools in 1966/67 and 1981/82

Subject Type	Year 1966/67 (17 in all)	Year 1981/82 (22 in all)
Languages	Irish English French German Italian Spanish Latin Greek Hebrew	Irish English French German Italian Spanish Latin Greek Hebrew
Science Mathematics	Science Mathematics	*Science A *Science B Mathematics
Business Studies	Commerce Woodwork	Commerce Woodwork *Metalwork *Mechanical Drawing
Humanities, and the Arts	History and Geography Art and Drawing Music (3 courses)	History & Geography *Classical Studies *Music & Musicianship A *Music & Musicianship B *Humanities/Environmental Studies (Replace English/History/Geography/Civics in a small number of schools)
Domestic Studies	Domestic Science	Home Economics

*Connotes area of change.

Source: Department of Education Rules and Programme for Secondary Schools 1966/67 and 1981/82

TABLE 2

A Comparison of Recognized Curricular Subjects for the Senior Cycle of Secondary Schools in 1966/67 and 1981/82

Subject Type	Year 1966/67	Year 1981/82
Languages	Irish English French German Italian Spanish Latin Greek Hebrew	Irish English French German Italian Spanish Latin Greek Hebrew
Sciences	Mathematics Applied Mathematics Physics Chemistry Physics & Chemistry General Science *Botany	Mathematics Applied Mathematics Physics Chemistry Physics & Chemistry *Biology
Applied Sciences	Agricultural Science *Physiology & Hygiene	Agricultural Science *Agricultural Economics *Engineering Workshop Theory and Practice *Building Construction *Mechanics *Home Economics Scientific and Social *Technical Drawing
Humanities and the Arts	History Geography Art (including crafts) Music	History Geography Art Music and Musicianship
Domestic Studies	Domestic Science	Home Economics
Business Studies	Commerce	*Business Organization *Accounting *Economics *Economic History (Computer Studies impending)

Source: Department of Education Rules and Programme for Secondary Schools 1966/67 and 1981/82

When we examine the rates of participation, (see Table 3 (a) below), in a range of subjects in the Intermediate Certificate for the years 1973 and 1960 we can see that the rate of increase in Mechanical Drawing and Commerce among boys and in Science among girls is considerably greater than the comparable increase in French. Participation in History and Geography has even shown a slight decline among both sexes.

TABLE 3 (a)

Intermediate Certificate

	Boys				Girls			
	1973		1980		1973		1980	
	No. of Boys	% of Cohort	No. of Boys	% of Cohort	No. of Girls	% of Cohort	No. of Girls	% of Cohort
Mechanical Drawing	6,311	34%	10,945	44%	8	00%	75	00%
Commerce	5,741	31%	11,878	48%	12,076	57%	17,775	66%
French	9,114	49%	14,921	61%	15,035	72%	20,203	75%
History & Geography	16,566	90%	Geog. 21,928 Hist. 21,888	89% 89%	20,144	96%	24,654 25,035	93% 93%
Science (Both courses	16,945	92%	22,023	90%	6,865	32%	15,323	57%
Total No.of Examinees	18,343	100%	24,428	100%	20,828	100%	26,794	100%

Source: Department of Education Statistical Reports, 1973 and 1980. Government Publications Office, Dublin.

In the Senior Cycle the growth of the business and industrial sector is even more pronounced (See Table 3 (b) below). Of the three "Arts" subjects two show a significant decline, History and Geography; while French has grown in popularity especially among boys. Its popularity in an E.E.C. context is undoubtedly related more to its commercial rather than to its literary value. The science, business and technical subjects, however, all show considerably greater proportionate increases then French in the rates of participation by both sexes. The rate of increased participation by girls in Technical Drawing, and to a much lesser extent in Business Organization, are exceptions to this.

TABLE 3 (b)

Leaving Certificate

	Boys				Girls			
	1973		1980		1973		1980	
	No. of Boys	% of Cohort	No. of Boys	% of Cohort	No. of Girls	% of Cohort	No. of Girls	% of Cohort
Technical Drawing	1,020	8%	2,873	18%	1	00%	17	00%
Business Organization	2,256	19%	4,132	26%	3,091	22%	6.143	29%
Biology	2,493	21%	6,410	40%	3,844	28%	12,899	62%
French	3,903	32%	8,319	52%	7,880	58%	14,347	69%
History	5,358	45%	5,958	37%	7,421	55%	6,997	33%
Geography	8,276	69%	8,351	52%	8,159	60%	8,959	43%
Total No. of Examiness	11,831	100%	15,885	100%	13,449	100%	20,654	100%

Source: Department of Education Statistical Reports, 1973 and 1980.

There are two significant factors which, I think, have contributed to this situation, both of which are interrelated. First of all, our society is a socially stratified one: "The kinds of cultural resources and symbols which the schools select and organize are therefore dialectically related to the kinds of normative and conceptual consciousness which such a society requires". (Apple, 1979, p.2.). At the upper echelons of this stratified system economic utility demands that knowledge (and by implication knowledge creators) be produced which will be macro-economically beneficial to the most powerful classes in society. Industrial and scientific knowledge systems are more conspicuous in their realization of this ideal than the arts, humanities and social sciences as Michael Apple (1979, pp.35-40) has recently pointed out. Their immediately conspicuous economic utility, therefore, and their testability have greatly facilitated their incorporation in the second-level curriculum. What is often forgotten in the Irish context, I think, is the extent to which the ultimate function of this knowledge also determines the nature of its distribution. Those who press for the introduction of more technological and industrial related knowledge in the curriculum are principally concerned with the maximisation of opportunities for economic expansion, and as Apple has so aptly pointed out:

> ... what is actually required (therefore) is not the widespread distribution of this high status knowledge to the populace in general ... As long as the knowledge form is continually and efficiently produced, the school itself, at least in this major aspect of its function, is efficient. (1979, p.37.).

Low levels of achievement, or indeed the exclusion, of some groups from this knowledge will therefore, be readily tolerated, as it is the production and development of the knowledge which is of consequence, (by a tiny elite if necessary), and not the extent of its distribution. The strange irony of this preoccupation with knowledge production is that it is counter-productive even within its own terms. A recent paper on industrial relations problems in Ireland (Roche, 1981) highlighted the fact that so much of industrial strife is contingent on the hierarchical structure of the business sector itself. By implication, therefore, the hierarchical distribution of the knowledge systems which help realize these structures must be open to question.

The pre-occupation with the production rather than utilization of knowledge systems in the business sector, of course, merits a similar criticism to that applied to all knowledge systems in the earlier part of the paper. That is, an awareness of one's collective interdependence cannot be easily developed when people are educated to perceive phenomena independent of their social constructs and effects.

It would be inaccurate, however, to represent the concern for having economically utilizable subjects on the school curriculum, as a conspiracy by an elite. It can only occur because of the cultural context in which it is located. The unprecedented rise in the standards of living over the last twenty years in Ireland has, I think, both laid the basis for the dominance of what Mannheim calls the "economic sphere" and, is, at the same time, indicative of its pre-eminence. As Mannheim has pointed out:

> (When)...the...economic sphere... becomes dominant (it) tends to bring all human activities into its orbit, including even actions and reactions which have nothing directly to do with economic behaviour at all.
>
> ...(It produces) great changes in the social function, and consequently also in the actual form, of the intellectual, spiritual and cultural factors in our society. (1952, p.244).

What I am saying, therefore, is, that rational economic self-interest is a major cultural value in Irish society and it exists in a dialectical relationship to the rising standards of living themselves. The centrality of economic self-interest as a cultural value is what grants public legitimacy to the expansion of industrial-business-scientific knowledge in the second-level sector.

In the next section of this paper, however, I shall try to explain how the economic (and indeed political) self-interest of certain sections of Irish society are much better served by second-level schools than those of others.

Socio-political Functions Implicity Realized by Second-Level Schooling.

While the first two major sections of this paper were devoted to an analysis of the explicit goals of second-level schooling, this third section is devoted to an analysis of its implicit functions. At the outset of this paper it was pointed out that educational reforms have not been very effective in producing a more egalitarian society. (For further international evidence of this cf. Levin 1981). Even within the educational system itself there is a good deal of evidence that educational reforms have done little to alter class based differentials in rates of retention beyond the age of compulsory schooling (cf. Clancy and Benson 1979, for evidence on Ireland). What I wish to isolate in this section of the paper are a number of important, (and to my mind neglected), sociological factors, which help explain the serious under-representation of lower socioeconomic groups in the non-compulsory sector of education. My focus of attention, therefore, will be on structural variables. I am, however, keenly aware of the role of the individualistic factors in explaining this phenomenon.

The point of departure here is, of necessity, a commentary on the social structure of Irish society itself. In its stratification system it generally resembles a pyramid in structure; there are a large number of relatively low income persons at the base (27 per cent being actually below the poverty line according to Ó Cinnéide (1980), and a minority holding positions of power and wealth at the apex (Rottman and Hannan, 1981, pp.7,8). By definition, therefore, only a tiny minority can attain positions of power and privilege in a 'pyramidic' situation. In other words, I.Q. + Effort cannot equal merit (cf.Young 1958) when only a limited number of meritorious positions exist in the first place. However, because educational credentials have formally replaced nepotism as the legitimate mechanisms for distributing positions of power and privilege, (where this applies), what happens in and through schooling is intimately bound up with the stratfication system of the social structure. For those inheritors of substantial unearned wealth educational credentials are desirable, though not essential, to legitimate their status positions;these are in a minority however. For the majority, the nature of the credentials one attains seriously influences one's status location on the pyramid. Success, therefore, is a relative thing; it means having relatively more educational credentials than others seeking the same position. Because increasing numbers are attaining all types of second-level credentials in recent years (cf. Department of Education, Statistical Reports 1972 - 1980/81) the market value of low grade educational credentials, for example the Intermediate Certificate or a Pass Leaving Certificate, has fallen considerably. Pupils, therefore, who know that they are only likely to attain such credentials have little incentive to stay in school. As competencies in reading and writing are important for attaining educational credentials the findings of a national study of sixth class pupils by (Fontes and Kellaghan, 1977, p.17) are relevant here. They found that children whose parents were unemployed, unclassifiable, and invalided, were those most likely to be handicapped at reading and writing, while the children of unskilled and skilled manual workers were the next in order of incompetence. Because therefore, as this study indicates, the children from lower socioeconomic groups are most likely to be the underachievers in school they have little to gain by staying on in school and attaining, at best, low grade educational credentials which will not secure them any significant advantage in the job market.

Any explanation of why children from lower socio-economic groups are under-represented in the non-compulsory sector of education must take cognizance of the role played by the school system itself in this regard.

There is considerable evidence from Britain,France and the United States that the cultural practices of the school facilitate the early departure, and relatively poor performance, of children, from lower socioeconomic groups. Paul Willis' (1977) research has shown how the cultural clash between working class boys and school eventually leads to the boys' self-elimination from the system, while Angela McRobbie (1977) has highlighted a similar phenomenon with respect to working class girls. Furthermore, Bourdieu's (1977) work in France has indicated clearly how the cultural climate of school life is essentially middle class, and is anathema in many respects to children from a different cultural context. A similar point is made in respect of purely linguistic practices by Labov (1973) in the United States. That the school ethos, therefore, is essentially a middle class one, and that there is an inevitable dysjunction between itself and working class cultural practices, seems well substantiated by the aforementioned evidence. It is the cultural dysjunction between two traditions, therefore, which helps facilitate the early departure of working class children from non-compulsory education (Cohen, 1981).

Inevitably one asks, "is it not possible to change either the culture of working class pupils or the culture of the school so that the two can synchronise?

First of all it is not possible to change the ideological superstructures (viz. values, attitudes, beliefs and tastes) of a culture without changing the political, economic and social substructures which lead to their development in the first place. In other words, if one wishes to see changes in working class values, tastes and lifestyles, one must change the political and economic substructures, such as housing, level of income, and working conditions, which facilitate the development of ideological culture in the first place (cf.Lane, 1972, Cagan, 1978). This is essentially a political and economic problem more than an educational one.

Even with regard to a change in the culture of a school political and economic considerations also come to bear. As I have pointed out in the earlier part of this paper, low levels of attainment by certain groups will be readily tolerated from school because of the economic and political functions they serve. Once schools (and colleges) produce both knowledge and knowledge creators who will help maximise profit for the business, professional and industrial sectors they are not likely to experience much pressure to change. It is not likely, therefore, that schools will be under pressure to change the cultural climate in which they transmit this so called 'valuable' knowledge to certain pupils so successfully. To question the cultural context of school (or indeed the knowledge systems it transmits) is to question the legitimacy of the many vested interests it serves, and is therefore liable to be strongly resisted. The cultural practices of school life, therefore, operate implicitly as social control mechanisms facilitating the self-elimination of lower socioeconomic groups from non-compulsory education at an early stage. One cannot adequately explain this phenomenon in terms of a 'conspiracy theory of vested interest'. However, a theory of educational and cultural laissez-faire would be extremely useful. The socially selected nature of third-level participants in this country means that there is considerable interchangeability between political, economic, educational and intellectual elites. Those who define the purposes of education, therefore, are predominantly from the middle and upper socioeconomic groups. Because of this they most likely share the 'domain assumptions' of their background as Gouldner (1970, p.30) has pointed out: Being middle class, he says is to demand 'usefulness', it is to be 'proachievement' and 'proindividualistic' (1970, p.63). What seems to emerge, therefore, is a dually based system of educational laissez faire. On the one hand, the interests of political and economic elites are being satisfactorily served by the educational status quo. On the other hand, educationalists themselves are not challenging the educational order sharing as they do the domain assumptions of other elites.

In conclusion, it is suggested here, that second-level schools implicitly serve the sociopolitical interests of upper socioeconomic groups in Irish society at the expense of the lower. Three major structural factors contribute to this: (1) The relatively low market value of the educational credentials most attainable by lower socioeconomic groups; (2) the interaction between the middle class cultural practices of the school and the norms and values of working class traditions, and finally, (3) the control exercised by existing elites over the definition of what is appropriate educational experience for all members of society.

Conclusion

In this paper I have presented a sociological analysis and critique of some of the explicit and implicit functions of second-level schooling.

With regard to the explicit functions of schooling a critical analysis of cognitive competency as an educational objective was undertaken. In particular I focused attention on the concept of understanding on which cognitive objectives are currently premissed. The main point of argument here is that understanding of a given phenomenon is not adequate unless it incorporates a socially situated dimension. It was also pointed out that little is known in the first place about the ability of schools to teach cognitive skills, and secondly, that even if it can teach them, there is no definite evidence that this learning can be applied in logically unrelated areas.

The second major part of the paper was concerned with an analysis of the type of knowledge which has gained curricular preeminence in recent years. The focus of attention here was on why scientific, business and industrially relevant subjects have attained so much contemporary educational importance. The main reasons for this I argue were firstly, the demand for economically utilizable knowledge from the business and industrial elites, and, secondly, the development of rational economic self-interest as a major cultural value. Legimitacy is granted to the demands of the former through the almost universal public acceptance of the latter.

The belief, however, that the maximisation of the production of economically utilizable knowledge is somehow going to serve the economic self-interest of a majority of societal members is shown to be questionable in the latter section of the paper. Structural features of the stratification system itself, both acting directly and mediated through the schools' culture, facilitate and precipitate the early elimination of lower socioeconomic groups from non-compulsory education.

My critique of economic utilitarianism does not rest solely on the injustices it facilitates but also arises because of the values on which it is premissed. "The focusing of public interest on the usefulness of the individual results in the focusing on the side of life that has significance, not in its personal uniqueness, but only in its comparability, its inferior or superior usefulness to others". (Gouldner, 1970, p.64). One's value becomes contingent on one's comparative usefulness. Not only, therefore, are people evaluated and rewarded publicly according to their usefulness, but only a particular kind of usefulness is rewarded. Only those activities conspicuously and immediately involved in the production of profitable goods and services merit rewards. Those persons and activities not so involved are accorded unwarrently low status in the publc sphere. The old, the sick, the handicapped and, of course, persons in the work of "caring" are examples that most immediately come to mind.

To redefine the educational purposes of second-level schooling is to redefine the public values that support it. This I believe to be a twofold task; at once the creation of a new and more just economic order, and the deliberate reconstructing of the nature of educational understanding to incorporate a socially situated dimension.

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THE TEACHER AND POLITICAL SOCIALIZATION IN NORTHERN IRELAND POST-PRIMARY SCHOOLS

James McKernan

Introduction

During the past twenty years there have been a plethora of studies concerned with political socialization. Indeed, the area has become a specialism within the broader discipline of political science. This literature is of immense importance to those interested in the 'Northern Ireland problem' insofar as it may contribute to our understanding of the relationships between family, peer group, community, media and formal education with political behaviour.

The purpose of the research reported in this study is twoford: first, I wish to provide a general review of the literature concerned with the school as an agent of political socialization, in particular the role of the teacher and the effects of the formal school curriculum. Secondly, I wish to present the results of a survey of 202 post-primary teachers' attitudes and views related to the treatment of controversial political and social issues in Northern Ireland schools. The scope of the research is *not* focussed on the role of the major agents of political socialization external to the behavioural setting of the schools such as the family, community, peer group, or media; *nor* does this work seek to address the question of the relative importance of these agents as significant forces for political socialization, as these questions have been considered elsewhere (Almond and Verba, 1963; Hess and Torney, 1967; Easton and Dennis, 1969; Langton, 1969; Dawson and Prewitt, 1969). The central focus is, therefore, on the relationship between the effects of formal education and the political socialization process.

Researchers in Northern Ireland have seldom pointed their rapiers at teacher populations, preferring pupils as the subjects of their investigations. Given that schools do serve a political function, the specific research question dealt with in this study is: What do we know about teacher beliefs related to the process of political socialization?

Defining Political Socialization

Since the seminal work of Hyman (1959) various definitions of political socialization have been proferred. The definition offered in this study is derived from the work of Easton and Dennis (1969) who refer to political socialization as "those developmental processes through which persons acquire political orientations and patterns of behaviour". In essence, political socialization refers to the ways in which society transmits political culture from generation to generation (Langton, 1969). Another writer, Greenstein (1965), refers to political socialization as "all political learning, formal and informal, deliberate and unplanned, at every stage of the life cycle".

School and Teacher Effects

Historically, schools have been playing an increasingly important role in political education as they have taken over many of the functions of the family regarding formal education. In fact, in some revolutionary regimes such as China, Cuba, Viet Nam and Tanzania, the school is viewed as the major instrument for effecting cultural reconstruction and imparting political ideology.

Recent research (Hess and Torney, 1967; Sigel, 1970 and Ehman, 1980) indicates that schools may function as major agents of political socialization. These studies indicate that schools have an important part to play in providing individuals with knowledge and information relating to politics, yet it is still a moot question whether schools effect significant changes in political attitudes and behaviour.

In a national study of twelve thousand American pupils of all ages, Hess and Torney (1967) have argued that the school appears to be the most important and effective instrument of political socialization. It reinforces community institutions and contributes a cognitive dimension to political involvement. As an agency of political socialization it operates through classroom instruction and ceremonies. Similarly, a five nation study by Almond and Verba (1963) indicates that formal education plays a very significant role in creating political awareness.

The most thorough review of the effects of schooling on political socialization in America has been reported by Ehman (1980). Ehman concludes by stating that the curriculum was found to be effective in the transmission of knowledge and information but not in influencing political attitudes and participation.

Pupils' social class position, participation in school affairs, and school ethos and climate were all seen as being significantly related to changes in pupils' political behaviour.

The importance of the teacher in the process is fundamental. Goldenson (1976) reported impressive effects of teachers on political attitudes. The results showed that an experimental curriculum development project had significant effects on pupils' political attitudes, particularly when the teacher was seen as possessing "high credibility". Teachers who were viewed as low on "credibility" were found to have negative effects on political attitude change and acquisition.

The effects of social class and community should not be overlooked. Litt (1963) posits that political messages transmitted by schools differ according to the community location of the school. Litt has found that political awareness and educational participation was highest in high socio-economic status communities. Similarly, Langton (1969) suggests that altering the school environment of lower socio-economic status pupils may help to overcome typical political disabilities. Langton studied the political attitudes of lower status pupils in working class (homogeneous) schools and in heterogeneously integrated schools. The results indicated that homogeneous working class schools tend to reinforce low levels of political efficacy, political interest, political participation and political intolerance. On the other hand, lower socio-economic status pupils attending heterogeneous social class schools expressed higher levels of political interest, participation, efficacy and tolerance. It would seem that exposure to curriculum characterised by higher social class norms appears to influence resocialisation in the direction of higher social class norms and values.

Turning to the Republic of Ireland, Raven and Whelan (1976) found that working class children from inner city areas were more likely to be less satisfied with government than children from rural areas and that first year post-primary pupils did not have a clear grasp of the concept of "country". The results also showed that girls were more supportive of anti-violence than boys.

In the Appalachian studies conducted by Hirsch (1969) it was reported that with children between the ages of 10 and 17 years of age, the most important source of political information was the media rather than formal education. The importance of the media was also asserted by Fowlkes (1974), with schooling exerting some influence on the formation of political attitudes among 17 year old American pupils.

Huff (1974) found that amoung 1,000 schoolboys in North Carolina the school effects on political attitudes were minimal. Huff concluded that most attitudes were related to media and home factors.

There has been a good deal of controversy over the effects of the formal civics curriculum. Studies by Russell (1972, 1974), Mercer (1973) and Langton and Jennings (1967) indicate the ineffectiveness of the civics curriculum on political behaviour. In his study of three thousand schoolboys in Northern Ireland, aged 8 to 16 years, James Russell (1972, 1974) reported that formal courses in civics make little or no difference to the political attitudes of those who take them. Russell suggests that political attitudes in Ulster are formed while the child is very young and still anchored to the family, and that the chief influences upon political outlooks may not be gradual exposure to different socialization agents, whether church, school, media or family, but rather the attitudes are *precursive*;

that is, the religion of one's parents, as prescribed at birth, may be the single most important factor in determining one's political outlook. Russell (1974) suggests that just as one might explain a child giving allegiance to the British crown if born in England, or to the American government if born in the United States, so one might hypothesize that birth as a Catholic or Protestant in Northern Ireland may be the primary determinant of outlooks on regimes.

Several other studies indicate little or no assocation between formal instruction and the development of political values and beliefs. Horton (1963) found that formal courses in civics had little effect in shaping attitudes about the U.S. Bill of Rights. At third level education, Shick and Somit (1963) investigated the idea that greater knowledge of politics would nessarily lead to greater participation in political activity. However, these researchers concluded that greater political knowledge led neither to greater student interest in politics nor to increased political participation.

The tranmission of civic knowledge to the young is one of the avowed objectives of education in most countries and formal courses in civics, social studies and political education are viewed as the chief mechanism for realising this objective. In a national study, Patrick (1972) argues that traditional civics courses do little to create political awareness or to instill knowledge among pupils in America. Patrick showed that when experimental curriculum materials, methods and modes of instruction were developed, pupils produced significant gains in political knowledge among a sample of 14 year olds.

Langton and Jennings (1967) found that the civics curriculum had little or no impact on pupils' political attitudes except in the case of black minority pupils from lower socio-economic status backgrounds.

In Northern Ireland, Jenkins and O'Connor (1980) found that pupils exposed to an experimental social and cultural studies curriculum project between 12 and 16 years of age, dealing with controversial political and social issues, were found to be significantly more tolerant and understanding of outgroups than pupils not participating in the curriculum project, thus echoing the findings of Goldenson (1976) Patrick (1972) and Ellison (1974).

Ellison (1974) demonstrated that by implementing values clarification teaching strategies in high school civics courses, significant results were produced in pupils' political attitude formation. The effects of experimental curriculum development work bear further analysis in that it suggests that pupils' attitudes, knowledge and behaviour are subsequently affected after treatment of innovative curricula. When no special curriculum effects are mounted the traditional civics curriculum appears to be somewhat ineffective in its influences on pupils' political learning. Yet a warning bell should be sounded here. Tapper and Salter (1978) suggest that we should not expect to find massive experimentation and curriculum development in Britain in the area of political education at a time when the economic picture and the curriculum reform movement of the 1960's and 1970's are grinding to a halt. Furthermore, the climate is one of returning to the mastery of basic competencies rather than experimenting with new modes of teaching politics.

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There is some evidence from the second National Assessment of Educational Progress (NAEP, 1978) in America, that shows a significant decline in political knowledge and attitudes of 13 to 17 year old pupils of social studies and citizenship during the period 1969-1976. Pupil knowledge about the structure and function of government showed the most dramatic decline.

Studies of teachers in the political learning process have been few in number. Research by Jennings and Zeigler (1970) suggests that teachers tend to keep a 'low profile' on political expression in American classrooms. The researchers argue that this is most likely due to the effects of regionalism, educational qualifications and years of teaching experience. Their data indicate that southern teachers were more reluctant than northern teachers to take up political ideas in schools. The results indicated that teachers with higher educational qualifications and longevity of teaching experience were most likely to deal with contentious political issues.

In a survey of teachers in the Republic of Ireland concerned with teacher perceptions of educational objectives, Raven, et al. (1975) found that 90 per cent of teachers of academic pupils believed that education should 'promote a sense of duty toward community'; yet only 46 per cent of these teachers believed that this objective was attained. It is of interest to note that only 44 per cent of the teachers (N = 612) believed it important that pupils "be aware of the prolonged struggle for Irish freedom and are determined to uphold the ideals which inspired it", and only 36 per cent of teachers felt this goal was attained in their teaching.

In a recent study of teacher dogmatism in Northern Ireland, McKernan (1981) found that teachers who were engaged actively in an experimental curriculum development project were more open-minded and less dogmatic than their colleagues in Catholic or state controlled post-primary schools.

One of the interesting features of the literature is the almost complete absence of studies that focus on the relationship between religious composition of schools and political socialization effects. Studies by Leatherman (1962) and Trost (1971) offer few interpretable findings. Given the importance of the religious factor in Northern Ireland, this will be a key variable in the present study. Because religion is ascribed at birth and because communal groups are highly segregated along religious lines in terms of housing, education, sport and politics, a child may never be exposed to another child holding different religious beliefs except across a barricade.

It should be borne in mind that one of the major features of political education is that it is highly value-laden, and ideological in nature. Most of the studies reported make no attempt to study the underlying ideologies offered in political education, nor do they attempt to explore the values and norms of specific groups and relate these to local conditions and human situations. In order to make the process of political learning understandable, researchers need to focus upon local culture and specific controversial issues and interpret these in relation to the society that the schools serve. Despite the fact that schools serve as agencies of political socialization, there have been too few studies of teachers in the political learning process. From the varied and diverse studies reported above it would appear that while schools may contribute a cognitive dimension toward pupil acquisition of political information they do not function very effectively as influential agents of political attitude formation or political participation. The research reported in part two of this paper seeks to examine teacher beliefs about political education in Northern Ireland and thereby go some way toward illuminating the role of the teacher in political learning in a divided society.

The Survey of Teachers' Attitudes to Social and Political Socialization in Northern Ireland

The purpose of the research on which this section is based was to investigate, by social survey methods, the attitudes and knowledge of teachers in twenty post-primary schools in Northern Ireland in relation to dealing with political issues and social situations of a contentious nature in the classroom. In particular, the survey was mounted to collect data relevant to teachers' attitudes and knowledge concerning:

(1) the philosophy of the school on socio-political education;
(2) the role of the teacher in the socialization process;
(3) appropriate methods and materials for dealing with such controversial issues;
(4) specific issues of a controversial nature regarded as contentious by teachers relating to Northern Ireland life and culture.

The importance of learning more about socialization agents in Northern Ireland hardly needs stating. Understanding communal group behaviour patterns and

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allegiant views and practices may help to illuminate the "Northern Ireland Problem" and thus suggest possible strategies for resolving intergroup differences. For the past twelve years there have been constant rioting, demonstrations, bombings, assasinations and other civil disturbances. Over two thousand people have been killed. There is very little doubt that the present "troubles" have had a significant effect upon the behaviour of children (Fraser, 1971; Russell, 1974; Harbison and Harbison, 1980). Unfortunately, we do not have enough data-based studies to support or refute the many hypotheses that have been advanced concerning the effects of socialization. Consequently, it is the purpose of this study to focus upon one major agent of social, religious and political socialization - the teacher, and attempt to identify teacher attitudes and knowledge about this process. The effects of the school should not be underestimated. The average pupil will spend around fifteen thousand hours at school during the course of their formal education through post-primary schooling.

Background to the Study

The research reported in this study was mounted in connection with a large scale social studies curriculum development project in a number of Northern Ireland post-primary schools. The experimental curriculum being developed emphasised the need to deal with controversial cultural issues involving politics and social issues in Northern Ireland.*

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* Based on the work of the Schools Cultural Studies Project, (SCSP) a school-based curriculum development project (1973-1980) linked with the Education Centre, New University of Ulster, Coleraine, Northern Ireland.

The aim of the social studies curriculum was to develop pupils' understanding of Northern Ireland culture and of the social situations and controversial issues related to contemporary life in the six counties of Northern Ireland.

The Nature of Controversial Social and Political Issues

For the purposes of this inquiry, a controversial issue* is defined as any issue where one or more of its proposed solutions conflicts with the cherished beliefs, attitudes or values of some group of individuals. It is an issue to which no solution has been found that is acceptable to all. When a course of action is formulated so that there is consensus of opinion which virtually all individuals or groups in society accept, then the issue is no longer controversial.

METHOD

Subjects

The respondents consisted of 202 post-primary teachers in twenty pilot schools associated with the Schools Cultural Studies Project. The achieved population consisted of 125 teachers in Catholic maintained schools and 77 teachers employed in State controlled schools. While not a random sample, the schools were representative of grammar, technical, secondary intermediate and comprehensive. Schools were situated in rural and urban backgrounds and located near to and far from the border with the Republic of Ireland and from areas of severe political violence as well as areas of relative peace and tranquility.

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*See Table 6 for the list of specific controversial social and political issues identified by teachers in the present study.

The Instrument

The researcher developed, with the assistance of participating project teachers, a four-part questionnaire consisting of one hundred and six items requesting data on teacher characteristics, attitudes to teaching controversial issues, attitudes to curriculum change and the relative importance of constraints on handling controversial issues. The instrument consisted of ninety-three dependent and thirteen independent variables. The results discussed in this paper are concerned primarily with teachers' views and opinions concerning the treatment of controversial political and social issues.

Mode of Analysis

The teacher data were coded for tabulation and subsequently punched on IBM cards suitable for statistical analysis. The data were analysed in accordance with procedures implemented in the Statistical Package for the Social Sciences (SPSS) as described by Nie, Bent and Hull (1970). Chi-square was used as the main test of statistical significance. For the purposes of this study the level of statistical significance adopted was the .05 level.

Cronbach's Alpha (internal consistency reliability index) was computed for the Specific Controversial Issues Scale.

Specific Issues Scale (item^{s} 16-50) Reliability was computed to be .96. The alpha coefficient of internal consistency reflects the degree of reliability among items of a scale in terms of overlapping variance.

RESULTS

Findings for the Whole Teacher Population

Before proceeding with a more detailed analysis of the findings of the whole teacher population to Part 1 of the survey questionnaire, it might be instructive to consider two vital issues related to the handling of controversial issues. First, what is the frequency with which contentious issues arise in Northern Ireland schools, and secondly, to what extent do teachers actually handle explosive social, religious and political issues if indeed they do arise in the course of their teaching?

Table 1 sets out the responses for teachers in State and Catholic second-level schools with regard to the frequency of controversial issues arising in class.

TABLE 1

School Type by Frequency of Controversial Issues

	How often do controversial issues arise in the course of your teaching?			
School Type	Most of time %	Sometimes %	Hardly ever %	Never arise %
Protestant (N = 77)	3.9	59.7	31.2	5.2
Catholic (N = 125)	4.0	72.6	21.8	1.6

Chi-square = 13.97 3df, p < .01

A very small minority of teachers (approximately 4 per cent) report that controversial issues arise "most of the time". The table does indicate, that a majority of Catholic and Protestant teachers feel that controversial issues arise "sometimes", although Catholics report that the occurrence of controversial issues is more frequent than teachers in State schools. Finally, it is important to note that Protestant teachers are more inclined to say that such issues hardly ever or never arise. These differences are statistically significant (P < .01).

Given that teachers, by and large, feel that contentious issues occur in the course of their teaching, the next question of importance is: To what extent do teachers handle controversial issues? Table 2 provides useful data for the answer to this question.

TABLE 2

Type of School by Handling of Controversial Issues

	If indeed controversial issues arise in your teaching, to what extent do you handle them in your teaching?			
	Issues never arise %	Deal with them most of the time %	Deal with them some of the time %	Never deal with them %
Protestants (N = 77)	2.6	49.4	37.7	10.4
Catholics (N = 125)	2.4	56.5	38.7	2.4

Chi-square = 16.80 3df, p < .001

The findings reported above indicate that Catholic teachers are more ready to handle controversial issues if in fact they do occur in the course of classroom practice. However, it should be borne in mind, that a majority of teachers in both types of schools, are willing to handle contentious issues if they occur. Protestants report a tendency to avoid, or not treat controversial subjects if indeed they do arise.

The findings reported in the tables above have serious implications if one is to regard the teacher as an agent of political or religious socialization, particularly in a society where loyalties and allegiances are divided.

Table 3 sets out the responses of teachers in Protestant and Catholic schools on variables 1-3 of the questionnaire. This part of the questionnaire was particularly concerned with: the role of the school on controversial issues on three dimensions; the perceived need of change in social education; the responsibility of the school to treat controversy and attitudes to a non-involvement strategy for schools.

The results of Table 3 lend considerable support to the notion that Catholic teachers believe that the school should play an active role in the treatment of controversial issues, through the implementation of changes in social education practice. Secondly, item 2 indicates that while the majority of teachers, both Catholic and Protestant agree that the school has a function to perform regarding controversial items, the difference in response suggests that Catholic teachers are more strongly united in their agreement to this principle. The results of teacher responses to items 1 and 2 may suggest that Catholic teachers may be more reform-minded in their disposition than their Protestant colleagues. Reform-minded in the sense that they are more open and willing to put the crunch issues in politics and religion facing Northern Ireland culture up for examination and to see their role as one of creating the conditions that facilitate awareness of issues and their understanding by pupils.

TABLE 3

Differences between responses of Catholic and Protestant Teachers on the Role of the School and Controversial Issues

Item	Religion	SA %	A %	D %	SD %
1. Time is ripe for changes in social education of Northern Ireland pupils	Prot.	42.5	44.2	11.7	1.3
	R.C.	49.2	46.0	3.2	1.6
	$X^2 = 16.18$ 3df, $P < .001$				
2. Schools have a responsibility to include controversial issues in the curriculum	Prot.	39.0	44.2	14.3	2.6
	R.C.	49.2	45.2	4.0	1.6
	$X^2 = 21.59$ 3df, $P < .001$				
3. Schools should transmit knowledge and facts and ignore controversial issues.	Prot.	10.4	16.9	46.8	26.0
	R.C.	5.6	12.9	47.6	33.9
	$X^2 = 8.49$ 3df, $P < .05$				

Analysis of the results of item 3 reveals that Protestant teachers are slightly more inclined to ignore controversial issues (although a substantial majority on both sides of the religious barrier feel that the school should not only be concerned with facts and knowledge) than Catholic teachers. To support the view that the schools's role is one of knowledge transmission alone could be called a "preservationist" strategy that is more concerned with passing on and preserving elements from the past. The consequences of pursuing this "preservationist" strategy is that schools would carry on their work apart from the events that are shaping political and indeed, cultural change in Ulster.

TABLE 4

School Type by Role of Teacher on Procedural Neutrality

Item	Religion	SA %	A %	D %	SD %
A teacher should aspire to neutrality	Prot.	26.0	57.1	14.3	2.6
in the teaching of controversial issues	R.C.	29.0	45.2	21.8	4.0
	$x^2 = 9.48$ 3 df, $P < .05$				

Table 4 is concerned with teacher attitudes toward the role of "neutrality" on controversial issues. The researcher wished to test the hypothesis that neutrality was an acceptable way for the teacher to behave. This strategy has been widely advocated by Stenhouse (1970) through the Humanities Curriculum Project, and has been, no doubt, widely misunderstood by teachers (Elliott, 1973). Stenhouse has argued that the teacher should not use his or her authority to influence the views of pupils, but rather to help pupils treat all views according to critical principles. When we examine the results of table 4 we find that some interesting, but curious findings emerge. Among Protestants, 83 per cent either strongly agree or agree with the concept of "neutrality", while 74 per cent of Catholic teachers favour this strategy,(earlier we found that Protestants supported more than Catholics, the idea that teachers should be permitted to voice their own opinions on value issues). On the basis of these findings, Protestants agree more than Catholics with neutrality ($P < .05$) yet both groups are highly agreeable to neutrality as a strategy of handling controversial issues.

In recent years a number of writers have debated the merits and demerits of teaching Irish history in Northern Ireland schools. Some (Magee, 1975) have called for an improvement in Irish history courses in order to give pupils a broader understanding of Ulster's past. A central issue of concern and debate has been the suitability of textbooks concerned with Irish history. Table 5 sets out the responses of teachers to the issue of Irish history.

TABLE 5

Differences between Catholics and Protestants to teaching Irish History

Item	Religion	SA %	A %	D %	SD %
9. The teaching of Irish history at present is inadequate in that it is biased and presents an inaccurate picture to pupils in Northern Ireland.	Prot.	20.8	50.6	28.6	0.0
	R.C.	26.6	50.8	18.5	4.0

$X^2 = 17.74$ 3df, $P < .001$

The results show that Catholics are more inclined to agree with this statement than Protestants, although teachers on both sides of the community agree that the state of Irish history teaching leaves a great deal to be desired.

The Controversial Issues of a Social and Political Nature

In Part 2 of the questionnaire (items 16-50) respondents were asked about their attitude to a list of thirty-five controversial social and political issues. A four point Likert scale of agreement/disagreement was used to show attitude to the issue being included in the curriculum of the school.

Responses were scored in the same manner as in Part 1 (1-4, lower the score, the more favourable the attitude in including the issue in the curriculum). Differences in response are set out in Table 6.

TABLE 6

Differences between Protestants and Catholics on Attitudes to Controversial Social, Religious and Political Issues

Item	Protestant (N=77) Mean ($\bar{X}$)	Catholic (N=125) Mean ($\bar{X}$)	Level of Sig. P <
16. Northern Ireland Civil Rights Movement	2.29	1.71	.001
17. Burntollett Bridge	2.42	1.89	.001
18. Gerrymandering	2.14	1.71	.001
19. Bloody Sunday in Derry	2.35	1.91	.001
20. Unionist control (Political) of N. Ireland	2.07	1.72	.001
21. All political parties	1.85	1.65	.01
22. Partitition of Ireland	1.72	1.64	.001
23. Violence to achieve political ends	2.28	1.93	.001

TABLE 6 (Continued)

Item	Protestant (N=77) Mean ($\bar{X}$)	Catholic (N=125) Mean ($\bar{X}$)	Level of Sig. P <
24. Internment	2.26	1.88	.001
25. Special category status for political prisoners	2.54	2.03	.001
26. Power sharing	1.85	1.66	.01
27. Direct Rule by Westminster	1.89	1.74	.01
28. Independence for Ulster	2.05	1.87	.05
29. United Ireland	2.07	1.80	.001
30. Paramilitary groups	2.33	1.87	.001
31. Role of British Army in Ulster	2.09	1.80	.001
32. Role of security forces (R.U.C., U.D.R.)	1.94	1.78	.05
33. 1974 Ulster Workers' Council Strike	2.26	1.92	.001
34. Principles of Communism	2.07	1.82	.001
35. Relationship between Church and State	1.96	1.67	.001
36. Divorce	2.02	1.80	.001
37. Mixed marriages (Religious)	1.89	1.63	.001
38. Integrated education	1.74	1.64	N.S.
39. Vandalism	1.83	1.54	.001
40. Teenage gangs	1.98	1.76	.001
41. The Orange Order	2.24	1.93	.001
42. The Ancient Order of Hibernians	2.31	2.04	.001
43. Parades and other cultural festivities in Northern Ireland	2.07	1.84	.001
44. The Peace Movement (Peace People in Northern Ireland)	2.03	1.79	.01
45. Allocation of public housing in Northern Ireland	2.13	1.80	.001

TABLE 6 (Continued)

Item	Protestant (N=77) Mean ($\overline{X}$)	Catholic (N=125) Mean ($\overline{X}$)	Level of Sig. P <
46. Neglect of the northwest part of the Province of Northern Ireland by successive Unionist governments	2.19	1.73	.001
47. Legalized abortion	2.20	2.02	.001
48. Future of the welfare state	1.93	1.74	.001
49. Population shifts as a result of violence in Northern Ireland	1.92	1.79	.001
50. Banning of Sunday sports in Northern Ireland	2.06	1.96	.001

	Mean	S.D.
Protestant Teachers	73.14	17.89
Catholic Teachers	63.13	17.07

't' = 3.93 P < .001

Table 6 indicates quite clearly that with regard to specific social and political issues, that have been identified by the teachers themselves as controversial, Catholic teachers are consistently more favourable to teaching these issues in post-primary schools in Northern Ireland. Only on the issue of 'integrated education' do we not find a significant difference between communal groups. Both groups favour dealing with this issue in their curricular activities.

Among Catholics, the issues which appear most disagreeable are 'The Ancient Order of Hibernians', "special category status for political prisoners", and "legalized abortion". For Protestants, the most contentious issues are "special category status for political prisoners", "Bloody Sunday in Derry", and "the case of Burntollet Bridge".

Discussion

This study set out to review briefly the literature concerned with the school and political socialization and to survey the views and attitudes of post-primary teachers to dealing with controversial social and political issues in Northern Ireland.

While schools appear to make substantial contributions to pupils' acquisition of political information and knowledge, much more needs to be known about whether schools have any significant impact on pupils' political attitudes and behaviour.

With regard to the empirical data relating to the Northern Ireland teacher survey it should be pointed out that the findings need to be regarded as tentative pending further inquiries and controlling for variables not taken into account in this study. Secondly, the teachers were drawn from twenty post-primary schools participating in a large social curriculum development project and no attempt is made to generalise these findings to the larger body of teacher opinion in Northern Ireland.

A number of conclusions may be drawn from the data. First, there is a strong indication that the religious factor is crucial in determining teacher attitudes to social and political socialization in Northern Ireland schools. Catholic teachers emerge as much more tolerant to handling contentious issues than Protestant teachers if and when they arise in the course of classroom activity. Catholic teachers are more firmly agreed that these issues should be dealt with in the curriculum. This may suggest that Catholics, as a minority group in Northern Ireland, view many of these issues as the symptoms of oppression by the majority group, and feel that they need to attack the established regime through educational processes. This may explain the fact that Catholics are more disposed to educational changes, particularly in social education.

When specific political and social issues are analysed, Catholic teachers were found to be more agreeable to including these issues in the formal curriculum than Protestants. This was true for 34 out of 35 specific issues. Both Catholics and Protestants were equally agreed that the issue of 'integrated education' should be dealt with in the school curriculum.

While a good number of differences are found between Catholic and Protestant teachers in their attitudes to teaching controversial issues, it should be noted that teachers on both sides of the community are, on the whole, agreeable to the idea of including controversial political and social issues in the curriculum.

While the impact of external agencies such as the media, family, paramilitary groups, community associations and other organizations must be very strong in shaping political behaviour, it is argued that the schools's role is fundamental to the learning of basic political knowledge and may be instrumental in forging pupils' political attitudes, values and modes of political participation.

There is a great need for more systematic research into the effects of the socio-political curriculum on both pupils and teachers in Northern Ireland. We need studies that demonstrate the effects of educational programmes more clearly. In addition, there is a need for work which analyses political education in Catholic and Protestant schools and which lays bare the aims, objectives, content and methods of instruction. In addition there is a crying need for politically relevant education programmes. There has been too little curriculum development work in politics within Northern Ireland schools. It is highly likely that success in dealing with controversial issues in the schools will more directly be related to imaginative teachers' materials than to traditional texts or school policies compelling teachers to deal with such issues.

Concerted efforts need to be devoted to ensuring that Catholics and Protestants do not receive qualitatively different programmes of social and political education which obscure understanding and which reinforce existing communal divisions.

Educational courses need to be developed that focus on the Northern Ireland Problem - its history,evolution, and alternative models of conflict resolution. Traditional civics courses would appear to be inadequate and ineffective in meeting this objective. Courses need to be developed by groups of teachers and others with a stake in the education system that take account of basic concepts related to the operation of a democratic society and to communicate these concepts in such a way that pupils build up a gradual understanding of political structures and processes. This suggests a 'spiral curriculum' in which children learn the structure of politics by absorbing the most powerful concepts that make up political education, and by having real experiences of using these concepts and strategies in the classroom so that they can apply these ideas to their daily lives.

Particular attention needs to be devoted to sequencing these concepts and learning experiences in a manner that reinforces understanding. By building inquiry learning processes into the curriculum and by relating the curriculum to the real world of politics in Northern Ireland, it is argued that the curriculum will have a much greater impact on shaping political attitudes and values which will be subsequently reflected in pupils' political behaviour.

In this paper the thesis has been argued that the school has an important function and role to play in political and social education that fosters intergroup understanding and promotes greater tolerance among communal groups. The task of developing a sound programme of political education is complex, but urgently required. Curriculum developers need to take account of teachers' attitudes to controversial issues and handling them in the classroom.

From the data marshalled in this study it would seem that Catholic schools would be more ready to accept new proposals for educational courses dealing with social and political issues, yet Protestant teachers also favour such programmes of education.

These data suggest that a carefully planned 'culture conscious' curriculum that deals with the explosive aspects of Northern Ireland society would be highly appealing to teachers on both sides of the religious divide and could very well have a considerable impact on pupils' behaviour.

Teaching about Northern Ireland's past, its heroes, bogeymen and political possibilities will certainly prove to be a demanding task even for the most skilled teachers, but this vital aspect of social and political education can not be overlooked or postponed any further if pupils are to understand the 'troubles' which are the "Northern Ireland Problem".

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EDUCATIONAL THEORY AND PRACTICE: A COMPARATIVE CASE STUDY AMONG PRIMARY AND SECONDARY TEACHERS

Michael Denny

Introduction

This paper presents the main findings of an exploratory case-study among 101 teachers in three primary and three secondary schools, situated in the Greater Dublin Area. The study sought teachers' views on the role which educational theory played in their day-to-day practice.

The paper is divided into three sections. The first section outlines the aim, scope and rationale for the work and describes the procedures by which the information was obtained. The findings are presented in the second section and they are interpreted in the light of previous research in the concluding section.

Aim, Scope and Methodological Procedures

The survey was part of a study (Denny, 1981) which sought to explore the nature of the relationship between educational theory and practice. Reports (Higher Education Authority, 1970, Lelievre, 1973) on teacher education in both the Republic of Ireland and Northern Ireland stress that teacher training has an important role to play in the development of a professional body of teachers. Furthermore, these reports emphasise that teachers ought to have a knowledge of, and on-going interest in, educational theory and research. The survey was designed to ascertain if practising teachers placed this same emphasis on teacher education, in general, and on educational theory in particular.

Since a truly representative sample of first and second level teachers would have required a large scale study beyond the resources available to the researcher, it was decided to survey the teachers employed in six schools. The schools were chosen from among others in the Greater Dublin Area in consideration of their primary/second level status (three primary, three secondary), their sex category (two girls' schools and one boys' school at each level), and their socio-economic composition (middle income group).

In all, 123 questionnaires were distributed, 66 to the three primary schools and 57 to the three secondary schools. A total of 101 completed questionnaires were returned, 56 by the primary teachers and 45 by the secondary teachers, representing an overall response rate of 82.1 per cent. Table 1 sets out the number and gender of respondents teaching at each level.

TABLE I

Respondents by Teaching Level and by Gender

	Primary	Secondary	Total
Male	11	20	31
Female	45	25	70
Total	56	45	101

A pilot study among six teachers, not members of the survey polulation, suggested that teachers' recollections of their teacher training were not sufficiently clear to permit detailed questions relating to the various courses offered in teacher training. For the purposes of the survey, therefore, the term "educational theory" was used as a blanket term to cover such areas as History, Philosophy, Psychology and Sociology of Education.

The survey was basically an exploratory case-study and, as such, it was intended to raise possible concerns for future research, rather than yield firm conclusions. While the findings may have relevance for teachers outside the six schools, future research would be required before any generalisations could be made.

Statement of Results

The results of the survey are presented under two headings corresponding with the two main areas examined. These two areas were:

1. Teachers' recollections of their interest in and satisfaction with the educational theory in their teacher training,
2. Teachers' interest in, and their perception of the relevance of, educational theory at the present time.

The results in relation to each area are presented below.

Key Area 1

Teachers' Recollections of their Interest in and Satisfaction with the Educational Theory in their Teacher Training

Respondents were first required to recall their level of satisfaction with the training they had received to become teachers. The responses established that 47 of the 99 teachers who answered this question were somewhat, to very, dissatisfied with their teacher training course. Table 2 indicates how the responses were distributed between men and women teachers and between primary and secondary teachers.

TABLE 2

Degree of Satisfaction with Teacher-Training

Level of Satisfaction	Total		Men		Women		Primary		Secondary	
	N	%	N	%	N	%	N	%	N	%
Very satisfied	23	23.2	2	6.5	21	30.9	18	32.7	5	11.4
Somewhat satisfied	28	28.3	8	25.8	20	29.4	16	29.1	12	27.3
Somewhat dissatisfied	32	32.3	11	35.5	21	30.9	15	27.3	17	38.6
Very dissatisfied	15	15.2	9	29.0	6	8.8	6	10.9	9	20.5
Unable to recall	1	1.0	1	3.2	0	0.0	0	0.0	1	2.3
Totals	99	100%	31	100%	68	100%	55	100%	44	100.1%
Chi-Square			13.64	D.F.4			8.53	D.F.4		
Significance			0.0085				0.0741			

Male teachers were significantly (p = 0.0085) more dissatisfied than female teachers. While the difference between primary and secondary teachers was not statistically significant at the 5 per cent level, the secondary teachers in the sample were markedly more dissatisfied than their primary colleagues.

The reasons why respondents believed that their training had been unsatisfactory centred on three related factors; namely, the lack of both practical guidelines and teaching practice and an apparent overemphasis on educational theory, (see Table 3).

TABLE 3

Teachers' Reasons for Dissatisfaction with their Training

	Total		Gender				Teaching Level			
			Male		Female		Primary		Secondary	
	N	%	N	%	N	%	N	%	N	%
4. Too little emphasis on teaching practice	32	59.3	10	50.0	22	64.7	8	30.8	24	85.7
6. Too little emphasis on provision of practical guidelines	46	85.2	17	85.0	29	85.3	20	76.9	26	92.9
7. Too much emphasis on educational theory	29	53.7	13	65.0	16	47.1	8	30.8	21	75.0
	N = 54		N = 20		N = 34		N = 26		N = 28	

Note: Since each respondent could give up to three reasons the sum of the frequencies is greater than the total of the respondents answering this section.

(Seven teachers, while generally satisfied with training, expressed some reservations in this section).

Of more direct relevance to the present study were the respondents' views on the educational theory they encountered during training. Respondents were requested to recall how satisfied they had been with the courses designed to cover educational theory. The responses established that of the 98 teachers who answered this question, 31 (31.6%) of the teachers said they had been somewhat or very dissatisfied with the material covered by the theory courses.

Table 4 sets out how the responses were distributed overall, between men and women teachers and between primary and secondary teachers.

TABLE 4

Degree of Satisfaction with Educational Theory presented in Training

Level of Satisfaction	Total		Male		Female		Primary		Secondary	
	N	%	N	%	N	%	N	%	N	%
Very satisfied	22	22.4	2	6.5	20	29.9	17	32.1	5	11.1
Somewhat satisfied	43	43.9	13	41.9	30	44.8	21	39.6	22	48.9
Somewhat dissatisfied	22	22.4	9	29.0	13	19.4	10	18.9	12	26.7
Very dissatisfied	9	9.2	7	22.6	2	3.0	4	7.5	5	11.1
Unable to recall	2	2.0	0	0.0	2	3.0	1	1.9	1	2.2
Totals	98	99.9	31	100.0	67	100.1	53	100.0	45	100.0
Chi-Square			15.87 ; D.F.4				6.25 ; D.F.4			
Significance			0.0032				0.1812			

Over half the male teachers (51.6 per cent) had been dissatisfied while less than a quarter (22.4 per cent) of the women teachers had felt likewise. This difference was statistically significant at the 1 per cent level. While the difference between primary and secondary teachers was quite marked it was not statistically significant at the 5 per cent level.

When level of teaching was controlled for,the difference between men and women remained statistically significant for the primary teachers at the 5 per cent level (Chi-Square 10.26, p = 0.0362). The difference between male and female secondary teachers remained, although not statistically significant at the 5 per cent level (Chi-Square = 4.83, p = 0.3050).

Comparison of results relating to teachers' levels of satisfaction with training overall and with the content of the educational theory courses revealed a very high correlation of 0.62 (p = 0.0000). This would support the hypothesis that an undue emphasis on educational theory was perceived by teachers to be a major source of dissatisfaction with training generally.

The reasons why teachers were dissatisfied with the educational theory courses were ascertained by asking respondents to indicate the three most important factors contributing to their dissatisfaction from a list of seven options. Table 5 shows the responses from this section.

TABLE 5

Teachers' Reasons for Dissatisfaction with the Theory Courses in their Training

	Total		Male		Female		Primary		Secondary	
	N	%	N	%	N	%	N	%	N	%
1. Subject matter was too removed from classroom practice	33	82.5	13	81.3	20	83.3	13	38.4	20	92.2
5. Subject matter felt at that time to be irrelevant	24	60.0	11	68.8	13	54.2	9	47.4	15	71.4
6. Subject matter failed to provide practical guidelines	15	37.5	5	31.3	10	41.7	5	26.3	10	47.6
7. Presentation of subject matter by lecturer was boring	24	60.0	11	68.8	13	54.2	13	68.4	11	52.4
	N = 40		N = 16		N = 24		N = 19		N = 21	

Note: Since each respondent could give up to three reasons, the sum of the frequencies is greater than the total of the respondents answering this section.

(Nine teachers, while generally satisfied with the theory courses, expressed some reservations in this section).

Overall, the greatest cause of dissatisfaction was found to have been the gap between classroom practice and educational theory; 33 (82.5 per cent) of the 40 teachers who answered this section claimed that the theory had been too removed from classroom practice and 24 (60 per cent) teachers had felt during teacher training that the material covered by the theory courses had been irrelevant.

The findings presented in this key area related to teachers' recollections of their attitudes to educational theory during training. The following key area examines the extent to which teachers perceive their practice and educational thought to be influenced by educational theory generally.

Key Area II

Teachers' Interest in, and their Perception of the Relevance of Educational Theory at the present time

Since many of the teachers surveyed were qualified for a number of years, it was possible that their recollections of theory and teacher training were less than clear, and, also, that their attitude to educational theory had altered somewhat since teacher training. This section, therefore, focused on teachers' attitudes to educational theory at the present time. These attitudes were principally ascertained by asking teachers to indicate:

(a) the factors which they regarded as influencing the practical guidelines they used in day-to-day practice;

(b) the extent to which practising teachers thought about certain issues in educational theory, and the factors which they believed influenced their own thinking on these issues.

The findings in relation to each of these areas are examined in separate sub-sections below.

(a) Perceived Influences on the Practical Guidelines used by Teachers:

Ninety-seven respondents, representing 96 per cent of the sample, indicated that they used practical guidelines in their day-to-day work. These respondents were asked to indicate from a list of nine options what they believed were the three most important influences in they formation of these guidelines. The most frequently cited influence was the teachers' experience, with 83.3 per cent of the men and 79.1 per cent of the women citing this option. For the men, this was closely followed by their common sense, with 80 per cent of them indicating that this was one of the three most important influences.

The differences, noted in the previous key area, between men and women, and between primary and secondary teachers, also emerged in this sub-section. Whereas 53.7 per cent of the women cited teacher training as one of the three most influential factors in forming guidelines, only 23.3 per cent of the men indicated likewise (Chi-Square = 6.58, p = 0.0103). Similarly 59.2 per cent of the primary teachers believed that it was one of the three most important influences, while only 25.6 per cent of the secondary teachers felt likewise, (Chi-Square = 9.68, p = 0.0019). Both these differences were significant at the 1 per cent level.

"Commonsense" and "memories of own pupil days" were cited relatively more frequently by male teachers and by secondary teachers when compared to women and primary teachers respectively. The differences between teaching levels with respect to these two options were significatn at the 5 per cent level (Chi-Square = 5.33, p = 0.0209; Chi-Square = 4.33, p = 0.0376). The difference between men and women was significant at the 5 per cent level (Chi-Square = 4.44, p = 0.0351) with respect to the option "commonsense".

(b) The extent to which practising teachers thought about certain issues, and the perceived influences on their educational thinking

This sub-section focused on the extent to which certain issues, chosen as being generally representative of educational theory, featured in the educational thinking of teachers. It focused on the extent to which practising teachers reflected upon certain issues generally examined in most eduational theory courses. In some ways therefore, this section dealt more directly than the previous section, with the perceived relationship between educational theory and practice. It was assumed that teachers who thought more about the listed issues would generally have a more favourable attitude towards educational theory.

Teachers were asked to indicate the extent to which they believed the majority of practising teachers thought about each of ten listed issues. A majority of respondents believed that practising teachers reflected, to some extent at least, upon each of the listed issues, except, in the case of two of the issues listed, namely, "the evolution of the Irish educational system" and "the functions which schools are meant to fulfil and which schools are actually fulfilling". The issue that was thought to receive most attention was "the evaluation of pupil performance". This was cited by 89.1 per cent of the respondents as being thought about, to some extent at least, by practising teachers.

Comparision of male and female teachers revealed statistically significant differences, at the 5 per cent level at least, with respect to eight of the ten issues. A greater percentage of women than men believed that other teachers reflected to some extent or to a great extent upon each of the ten listed areas. When level of teaching was controlled for, the differences remained in nine of the issues listed, and they were statistically significant at the 5 per cent level in three areas for primary teachers, and in four areas for secondary teachers.

Differences between primary and secondary teachers, significant at the 5 per cent level in four of the listed areas, also support the findings presented in the first key area. A greater proportion of primary teachers than secondary teachers felt that practising teachers reflected at least to some extent upon each of the ten topics.

The extent to which the respondents themselves thought about each of the listed educational topics was also ascertained. Teachers overall indicated that they reflected most upon the issue dealing with the evaluation of pupil performance.

Differences between men and women, significant at the 5 per cent level, on four of the ten issues, were consistent with those found in relation to other teachers' perceived educational thinking. When level of school was controlled for, these differences between men and women remained among both primary and secondary teachers on eight of the ten listed topics.

The results obtained from this sub-section therefore suggested that relatively more male teachers than female teachers perceived themselves and other practising teachers as giving less attention to each of the ten listed issues. Secondary teachers were found to consider these to a lesser extent than their primary counterparts.

Having examined the extent to which teachers reflected on certain issues broadly representative of educational theory, it was desirable to ascertain the factors which teachers perceived as important influences on their educational thinking. The three most frequently cited influences on educational thinking were experience, commonsense and informal discussions with other teachers. While the differences between genders and teaching levels were not statistically significant at the 5 per cent level, the trend, which was noted in the analysis of influences on teachers' guidelines, was evident. Male teachers and secondary teachers relied more than female and primary teachers, respectively, on commonsense. Relatively more women and primary teachers, on the other hand, cited teacher training, and in-service courses, among the three most important factors influencing their educational thought.

Overall the findings in this second key area would indicate that there was a relatively more positive attitude towards educational theory among women when compared to men, and among primary teachers when compared to secondary teachers.

Interpretation of Results

In the present survey, 47.5 per cent of respondents were dissatisfied with teacher training. Training was perceived as being too theoretical, with insufficient emphasis given to teaching and the provision of practical guidelines.

These findings are consistent with those of previous research. Sean Kelly (1970), studying the views of lay national teachers in Dublin in 1966, found that 69 per cent of respondents cited teacher training as a "source of dissatisfaction". Similarly, Keane (1978), found that 50 per cent of the primary teachers and 63.7 per cent of the secondary teachers in his sample were dissatisfied with their training. Previous research dealing specifically with teacher training suggests that students and practising teachers rate the practical aspects of their training courses higher than the more theoretical aspects. Nisbet, Shanks and Darling (1977), for example, in a study of 607 probationer teachers in Scotland in 1976/77 found that teaching practice was the most highly rated part of their teacher training. In addition, 71 per cent of the respondents in their study believed that there had been too much theory in the training course.

A sizeable minority (31.6 per cent) of respondents in the present study expressed dissatisfaction with the educational theory courses they encountered in training. The principal criticisms were that it was too removed from classroom practice and that it was irrelevant. These two factors could be causally related. The likely direction of this causality can be inferred with some justification from previous research. Lortie (1964), Hanson (1977), Mohrman et al. (1978) and Croft (1968) have all noted that teachers regard the classroom as the focus of their attention. Teachers were concerned to preserve their classroom autonomy and were willing to leave administrative matters almost entirely in the principal's hands. Given these previous findings, it would appear reasonable to infer that the twenty-four teachers who saw the educational theory in their training as irrelevant, did so because it was not seen to impinge directly upon their classroom practice.

There were statistically significant differences between male and female teachers, and, to a lesser extent, between primary and secondary teachers with respect to many of the variables examined. Male teachers and secondary teachers were more dissatisfied with training generally and with the theory courses specifically. These differences were also apparent in the section dealing with the educational thought of teachers. Relatively more women and primary teachers (than men and secondary teachers respectively) perceived themselves and other practising teachers as reflecting seriously upon the listed issues. Given that many of the educational theory courses in teacher training would be concerned with examining these issues, it would appear reasonable to suggest that relatively more women and primary teachers would have perceived these courses to have been relevant to the educational thought of teachers.

There was little evidence in the study that respondents believed that the practical guidelines they used, or their educational thinking, had been influenced, to any great extent, by their initial training, in-service courses or reading in educational theory. Thus it is clear that teachers, in the present study, relied on experiential knowledge. Their training experience, their commonsense, and informal discussions with colleagues were the most commonly cited influences on their educational thought and the practical guidelines. There was little evidence that these influences were enlighted by educational research findings.

Generally this reliance on experiential knowledge was more evident among male teachers and secondary teachers. Male teachers with strong avocational interests (Lortie, 1975), may not devote much energy to updating their knowledge of educational theory. Secondary teachers, as graduates, may feel deprived, with respect to pay and status, relative to other graduates, and may in consequence, undervalue the knowledge they require in day-to-day practice. Primary teachers, on the other hand, because of their more extended dealings with the same group of pupils, may devote more energy and time to updating their knowledge of educational theory, since they may be better placed both to notice the learning difficulties of pupils and to see the knowledge they impart in a wider pastoral context. Female teachers may also see the knowledge they impart in a wider context, due to the traditional emphasis on caring roles in the socialization of women. Finally, it could be that male teachers and secondary teachers may be more dissatisfied with teaching as a career, than female and primary teachers. If such is the case, then male teachers and secondary teachers may not feel inclined to devote much time and energy to updating their knowledge of developments in educational theory and research.

The less dramatic nature of the findings of educational research, compared, for example, with those of medical research, could be a factor in explaining why educational research is not perceived by teachers to be a major influence on their work. As Wilson (1962) pointed out, teaching is a "diffuse" rather than a "specific" activity; one concerned with the ordinary development of the child rather than his or her pathologies. Research findings in education, therefore, seem to inherit the characteristics of the activity they are investigating: they are less sensational and dramatic than those in medicine as they do not deal with the pathological: knowledge of them may bring changes in the educational system but it will be slow and difficult to see. Thus, it is difficult in education to attribute "success" to any one action or person. Likewise, it is difficult for teachers to "enthuse" about advances made in educational theory and research.

Finally, teachers may be less interested in those areas of educational theory and research which address broad issues, because they do not perceive themselves to have the power to change those aspects of the educational system where such issues tend to arise. There is ample research (see Leggatt, 1970, for example) that teachers do not have the professional power to define the structures in which they operate. The teachers' demand that educational theory be made relevant to practice has to be qualified. The educational practice to which the teacher refers appears, for the most part, to be classroom practice. Any moves, therefore, to adapt educational theory courses to satisfy teachers' demands for relevance must be taken cautiously. Such moves could presuppose a specific socio-historico-politico role for the teacher in the educational system. In addition theory could be reduced, as Dearden (1980) has warned, to the role of being "mere apologetic ideology" for current practice.

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PROFESSIONAL STATUS AS AN OPERATIONAL AND ASPIRATIONAL CHARACTERISTIC OF THE TEACHING FORCE IN THE REPUBLIC OF IRELAND

Michael McKeown

The concept of professionalism is a benign one. As generally used it is clearly in that class of words that D.J. O'Connor has termed as "hurrah" words. To be a professional is self evidently a good thing. Within the received wisdom of our time, to aspire to a professional status is a legitimate and valid goal for many organized occupational groups.

Possibly because of their benevolence the terms "profession", "professional" and "professionalism" are often employed so loosely as to be all embracing and practically meaningless. It has become increasingly prevalent to characterize an industrious practitioner in any field of activity as "a true professional". In the game of soccer it is now the practice to describe the pulling down of an opponent as a "professional foul". A broad spectrum of occupational groups ranging from medical practititioners to hairdressers identify themselves as professions.

Because of this looseness it is necessary to lay down some benchmarks for the measure of professionalism before offering any judgements about the extent to which the teaching force in the Republic operates within a paradigm of professionalism. There is little doubt that there is a belief both among teachers and some observers that teachers do constitute a professional group even where there is uncertainty about the intrinsic characteristics of a profession. Bell and Grant have remarked about the teaching force in these islands that "In Ireland, Wales and England as much as in Scotland a growing sense of professionality had imposed a new rigidity on the system."[1] Christina Murphy writing of the changes in the "role and training" of teachers has claimed that "it's no longer a place for the gifted amateur: it's a scientific profession".[2] Despite this, some observers have reservations. Kevin Williams has commented: "Ordinary language use unequivocally places medicine, law and architecture in the category of professions. I suspect that few people would readily put teachers in the same category and in my opinion they are right."[3] That reservation was also shared by Professor Ó Súilleabháin who has suggested that "Collectively teachers are often referred to as the teaching profession but the general feeling on the question is perhaps not so definitive".[4] His lack of assurance on the question is also shared by Pádraig Hogan who has, however, argued that regardless of whether teachers do represent a professional group, the concept of the teacher as a member of a profession entails "a broadly interpreted assumption of the teacher as a person having a special knowledge of one or more fields of learning and possessed also of certain strategies, skills and techniques of communication and assessment or, more generally, a body of pedagogical expertise".[5]

Underlying the judgements of all these observers is a presumption that two major determinants in establishing professional status and esteem are the recognition of demarcated job roles and the practice of theoretically supported skills. Undoubtedly, these two elements are essential features of a profession. They do not, however, confer professional status. If they did, then a high number of occupations could claim to be professions, and the prestige and status characteristic of the concept of a profession would disappear. Clearly there are other dimensions, and this is an appropriate point to specify the essential features of professionalism. It will be necessary also to indicate the interdependence of those features and to identify the intrinsic features of an occupation which ensure that its professional status is recognized.

(a) Members of a professional group lay claim to mastery of a specialized body of knowledge and skills which, although not widely dispersed outside the group, is esteemed by others as a legitimate field of knowledge. The public acceptance of particular fields of knowledge as valid can be transitory. Phrenology and astrology are two examples of knowledge systems which enjoyed public confidence at one time but are no longer considered to be legitimate knowledge by the academic community.

(b) Because the knowledge (know how and know that) is shared only within a restricted group, it is that group which determines acceptable levels of mastery and the parameters of knowledge. As Wilensky points out "Professionals have commitments and loyalties to a reference group composed of other professionals and to a defined set of normative standards governing their work."[6]

(c) This, in turn, suggests that the professional group should determine standards of entry and requirements, and should be sovereign in judging competency in the discharge of the professional function.

(d) Since such a claim confers significant autonomy upon members of the professional groups, it is necessary to safeguard against abuses of this autonomy by the development of an ethical code for the members of the profession.

(e) The claim to domestic jurisdiction and all the disciplinary apparatus flowing from that has little significance if the group does not enjoy legal recognition conferring upon it monopoly and judicial powers.

(f) Finally, as Wilensky stresses "norms dictate not only that the practitioner does technically competent, high quality work: but that he adhere to a service ideal - devotion to the clients' interests more than personal should guide decisions when the two are in conflict."[7]

The occupational implications of these six characteristics are that any occupational group which wishes to designate itself as a profession and wishes to have its professional status recognized must meet the following requirements:-

(1) The occupation should entail mastery of high level skills grounded in theoretic knowledge not easily accessible to the general public.

(2) The group should be self perpetuating, determining internally the appropriate knowledge and skills required and certificating possession of these.

(3) The norms determining the relations between members of the group and between the group and the public should be defined by the group and violations of these norms should be adjudicated upon and punished by the members of the group.

(4) The right to practise the practical skills for reward should be restricted legally to members of the group.

If these are indeed the essential characteristics of a profession, we can examine the circumstances in which teachers in the Republic fulfil their roles and consider how far they operate within frameworks congruent with those outlined above. If there are discrepancies between the actual framework and the model, we can also examine whether teachers wish to change the framework or whether they are content to preserve the status quo.

There would be a high level of consensus that the teaching force in the Republic satisfies the first of these requirements. The high level skills and the knowledge mastery demanded of all teachers in the public sector is attested to by the fact that a primary degree is now the minimum requirement for entry into teaching in the primary or post-primary sectors. Although the degree content is differentiated in response to differing curricular demands, all teachers entering the public service have publicly satisfied a test of excellence in their possession of esteemed knowledge.

As has been suggested above, however, decisions about the content and levels of that knowledge should be a function of the professional group. In so far as National Teachers or Vocational Teachers are concerned this is not the case. These two groups effectively have little corporate influence on the academic profiles of entrants to their sectors. Administratively, the entry level is determined by the Department of Education and academically, the content and level are adjudged by the Universities and their recognized Colleges. In their total divorce from the arenas where these decisions are made, the National Teachers and the Vocational Teachers do not satisfy the second condition of professional status.

The position of Secondary Teachers is somewhat different. The existence of the Secondary Teachers Registration Council and the entitlement of Secondary Teachers to representation on that Council ensures that they exercise some influence on the entry requirements into that sector, and that through the Council they can exercise a minimal influence upon the content of the Higher Diploma courses offered in the Universities.[8]

If teachers have little practical control over entry levels, they have no control over the standards or norms of professional service. The monitoring and supervision of standards rests jointly in the hands of the Department and school management. Although there are appeal provisions, the fact that judgements about professional efficiency are made by the departmental inspectors or school managers means that teachers are excluded from judgements on professional competency. Consequently they do not seek to require any standard of competency from their colleagues, nor do they specify any required standard or ethic in relation to their clients whether these clients are seen as the pupils, their parents or the school management. As Williams has pointed out "No rigorous code of ethics governs this aspect of a teacher's relationship with his pupils".[9] It is possibly because of the absence of such a code that management has found it necessary to insist on an albeit limited clause in contracts of employment. Is is not without significance in this context that the decision to abolish the use of corporal punishment in schools in the Republic was imposed by the Department of Education, rather than emerging from a professional code of practice agreed by teachers.

It is true that within their trade union organizations, teachers do specify behavioral norms in relation to other colleagues but this falls short of the professional requirement suggested by Wilensky.

This lack of professional autonomy is further emphasized when we consider how limited is the formal influence of teachers upon the curricula they implement. Although the 1980 White Paper did, in proposing the creation of a Curriculum Council, and the subsequent proposal by the Minister for Education in a speech to the Senate in 1981 to establish an Independent Curriculum and Examination Board, make some gesture to amelioration in this respect, it is the case that in relation to their role in curriculum development teachers act merely as agents for the Department of Education and their professional judgements are totally subordinate to decisions made by the Department; a reflection of what Coolahan and Hogan called "the widely held attitude that teachers are trained to serve the system".[10] Such a position is not consistent with the condition of professional autonomy.

Finally, it is clear that although there are legally established standards of entry into teaching in the public sector, there are no such standards applying to the private and commercial sectors of teaching. Granted that this is a marginal element within the school system in this country, it must, nevertheless, jeopardize the professional claims of any occupational group if uncertificated practitioners can gain access and recognition within any sector of that occupation.

The import of these considerations must suggest that teachers as a corporate entity, or as entities within their own sectors, have not achieved that degree of autonomy and consequent authority which indicates an authentic professional status. That the teachers' organizations are aware of this is quite clear, and that they would wish to achieve some enhancement of status is equally clear. They have over a period of time identified certain professional goals, but before considering these, it might be beneficial at this stage to consider intrinsic obstacles to the further professionalisation of the Irish teacher.

The first of these is the lack of a corporate sense within the various teaching units. Despite the fact that the Ryan award of 1968 established parity of salary scales, there are still strong lines of demarcation between the sectoral interests, lines which are strengthened by the different modes of entry. National Teachers may qualify either by the concurrent mode of the B.Ed., or the consecutive mode of primary degree plus one year's training. Secondary Teachers must qualify by the consecutive mode, while Vocational Teachers require no professional training to supplement their primary degree. This lack of uniformity in the structure of entry requirements must inhibit the emergence of a corporate self-image.

Should that develop in the fullness of time, the very potency of the image might prove a further obstacle to the achievement of professional status. An enhanced professional status for teachers would constitute a serious threat to the control exercised at present by the Department of Education and the management bodies. It would confer upon teachers a degree of control over the curriculum content and the allocation of educational resources which might not be consistent with the democratic norms of our age. While the autonomy of the universities is publicly conceded as an essential bulwark of academic freedom, the universities are, after all, providing for a relatively small element of the population and one which is totally voluntary. There is no certainty that such autonomy would be accorded to a professional group catering for a whole age population especially when that population is compelled by statute to avail of the services of the group. Even if the electorate was agreeable, the existing interests could be expected to oppose any erosion of their present powers.

A further and, possibly, more fundamental difficulty is that suggested by Hogan in his comments upon the ambiguous role of teachers. It is not entirely clear whom teachers are serving. The practitioner-client role which is a characteristic of professions cannot easily be imposed upon the relationships of the classroom. The locus standi of the teacher in relation to any one of his pupils is different from that of the confessor to the penitent, the doctor to the patient, the accountant to the client. The difference arises from two sets of circumstances. The teacher exercises an aggregate responsibility to the entire class group, while the other practitioners exercise a discrete responsibility to each individual client. Secondly, the line of responsibility and accountability between the latter group and their clients is clear and well-defined: the professional's first duty is to the client. It is unclear whether the teacher's first duty is to the pupil, the parents of the pupil, or the school management. It is undoubtedly true that since on most occasions the interests of each of these are seen to be congruent, teachers do not often have to confront this issue but it does arise, and when it does there is no professional wisdom to guide the teacher in such a dilemma.

Finally, it has to be considered that the failure on the part of teachers in the Republic to press strongly for professional recognition reflects the strength of the teachers' organizations in the Republic. Since the essential purpose of all professional societies is one of protection, the impulse to professionalise is likely to be strongest in situations where the practitioners feel themselves threatened by the activities of imputed quacks in a highly competitive context. Such a situation does not obtain in the world of teaching. There is a common pay master throughout the public sector which, as has been indicated, operates a near monopoly of provision of service. In such a context a strong trade union might well be a more appropriate protective organization than a professional society. If the precedent of the Scottish Teachers' Council, the only such body in Britain and Ireland, has any relevance for the Irish scene it would seem to suggest that is how Scottish teachers view the position. Philip Venning has remarked that "The Scottish G.T.C. has made little impact on the status of teaching and has done even less to rouse the interest of most classroom teachers. Only about a quarter of all those eligible vote for the members of the Council."[11]

Just as the power of the Department of Education and the school managers would be diminished if the teaching force secured an enhanced professional status, so also would that of the teaching unions.

Despite this, it is clear that some of the unions at any rate aspire to the achievement of a professional status and that they see AN CHOMHAIRLE MHÚINTEÓIREACHTA as the instrument to secure this. AN CHOMHAIRLE MHÚINTEÓIREACHTA (The Council of Teaching) had its origins in a report by The Higher Eduation Authority (HEA) on Teacher Education in 1970.[12] This Report had recommended the establishment of a body to be called AN FORAS OIDEACHAIS which would inter alia establish and monitor entry standards into the teaching profession, maintain a register and adjudicate on areas of alleged inefficiency. The body should be composed of twenty-seven members plus the Chairman, of whom six would be nominated representatives of the three teachers' unions, and six more representatives of the teacher training institutions.

This proposal was carried a stage further by the decision of the Minister to appoint a Planning Committee in October 1973 to consider ways of implementing the H.E.A. report. In appointing the Committee, however, he indicated that he considered the suggested title of AN FORAS OIDEACHAIS to be 'too sweeping a term' for the envisaged body and offered as an alternative the title AN FORAS OILIÚNA. In the event the Planning Committee considered that title too restrictive and offered as an alternative the name AN CHOMHAIRLE MHÚINTEÓIREACHTA.

This body, it was proposed, should act:

(i) as an advisory body to the Minister for Education on all matters relating to teacher education and supply and

(ii) as a professional body with charge of the professional affairs of teachers including their registration and probation.[13]

The Report developed the proposals of the H.E.A. but with significant modification in the balance of interests within the body. While in the original proposal teachers' organizations and teacher education institutions would have nominated only twelve members out of a total of 28 members, in the new recommendations their joint representation was to account for 24 out of 38, - a radical change in the complexion of the Comhairle and one which, if the proposals had been implemented, would have placed control of the teaching profession in these two groupings. This degree of influence was, however, unacceptable to the teacher organizations although they were in general favourably disposed to the proposal and eventually after discussions had taken place the Minister announced in February 1977 his intention of establishing An Chomhairle with a modified composition.[14] The 1977 proposal stipulated a membership of 41 members of whom 21 would be persons elected by registered teachers. Despite this concession however, certain aspects of the proposal caused some concern to the Teachers' Union of Ireland and that Union rejected the proposal at a Special Congress in 1977. Notwithstanding the fact that the T.U.I. entered into negotiations with the other Unions in 1978 on the issues in dispute, there has been no further evidence of any movement since that time. While it is possible to attribute the dilatory progess of An Chomhairle to the 'laws delays' it is difficult to avoid the view that if there had been an urgent demand on the part of teachers for professional status, seven years would have been a sufficient period of time to bring the Comhairle into being.

That there does not appear to be such urgency might be explained by reference to the considerations noted previously. The teacher organizations already provide protection in relation to salaries and most areas of conditions of service. While they have little influence upon conditions of entry and training requirements they can exercise a veto upon imputed moves to lower standards of entry as was evidenced in 1977 when the Minister attempted to introduce a sandwich course training for graduate entry. While the creation of An Chomhairle Mhúinteóireachta would enhance the power of teachers in these areas and would afford them new jurisdictions in the area of professional conduct and disciplinary powers, the actual conditions of service of teachers would probably not be significantly affected by such a creation. This is probably the reason for the lack of urgency in the teachers' demands for the establishment of An Chomhairle. The lack of urgency allied to the caution with which other agencies such as the Department and the employers must view the diminution of their powers entailed in the creation of An Chomhairle makes the reasons for the delay understandable. They do not make them any the less regrettable. The justification for this statement can be derived from the following summary of the present situation and its implications:

(a) The professional organization of teachers in the Republic of Ireland has been based predominantly on a trade union model, as with teachers in some parts of Britain. In so far as the teachers' unions have concerned themselves with issues beyond the "bread and butter" concerns they have tended to adopt a syndicalist approach. The success of teachers operating within a syndicalist model in securing control over the curricular procedures of the school system is evidenced by the degree of control teachers in England and Wales exercise over the curriculum. This control has been so pervasive that it led one Minister of Education to dub these procedures as "the secret garden of the curriculum" to which only teachers had access.

(b) While the teacher unions have been successful in maintaining entry standards and achieving a near 'monopoly labour' position, they exercise little influence upon the development of entry standards and the maintenance of practice standards.

(c) The decision-making loci on matters such as numbers admitted, quality of training and quality of service lie in areas relatively isolated from influence by organized teachers.

(d) There is,as a consequence,no forum where the perceived needs of teachers in relation to staffing, training provisions, curriculum content, standards of practice and ethical standards can be examined by all the parties engaged in the delivery of educational services.

(e) Because of this, teachers perform their tasks in a context of diminished autonomy where most of the major decisions relating to training, content and work standard are made by agencies which are distanced from the classroom.

It would seem self-evident to suggest that if teachers did have more opportunity to participate in such decision making, the level of classroom performance by teachers would ultimately be enhanced. Such a consideration prompts the conclusion that the establishment of An Chomhairle Mhúinteóireachta or some body similar in concept would make a significant contribution to educational progress in the Republic of Ireland.

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A STUDY OF THE TASK OF THE PRINCIPAL IN SECOND LEVEL SCHOOLS IN THE REPUBLIC OF IRELAND

Patrick B. Diggins

Very little research has been done to determine the exact nature of the task of the principal in second level education in the Republic of Ireland. In an attempt to fill that void I was prompted to engage in a study of what such a principal perceives his/her own task to be. This is a limited view but none the less it can be a revealing one on the administration of second level schools in the Republic.

I have reviewed the role of principal as perceived from a comparative perspective elsewhere.[1] For the purpose of this paper I consider Ordway Tead's definition of Administration as particularly useful:

> Administration is the process and agency which is responsible for the determination of the aims for which an organisation and its management are to strive, which establishes the broad policies under which they are to operate and which gives general oversight to the continuing effectiveness of the total operation in reaching the objectives sought. [2]

In relation to this definition I set out the function of the administrator as:

(a) identifying and giving expression to the aims of an organization;

(b) setting up the necessary procedures to achieve these aims with the maximum degree of efficiency;

(c) continuously assessing outcomes in relation to aims;

(d) defining future aims.

The principal is an educational administrator and the school is the organisation which he serves.

The Research

Aim of the Study: The study was based on the belief that before one could decide what a principal ought to do, it was necessary to find out what he does. A working hypothesis was formulated, which postulated that principal's perception of his role was such, that he was not performing the task of an educational administrator. The study proceeded to test this hypothesis. To do so it was necessary to arrive at a definition of the task of an educational administrator, as it ought to be, and as defined by writers on administration. It was necessary to appraise the tasks of the principal in second level education in the Republic of Ireland as it is, and to evaluate if such tasks are the tasks of an educational administrator.

The Research Instrument: The Critical Incident Technique as developed by Flanagan and others was used for this study.[3]

Selection of Data and Response: Table 1 shows the number of second level schools in the Republic of Ireland, (537), the number enrolling 100 or more students, the number in each category of school, the size of sample, and the rate of response. Schools enrolling less than 100 students were excluded from the sample.

TABLE 1

Category of School	Total	Enrolling 100 or more students	Sample	Response
Recognised Secondary Schools	537	524	67	43
Secondary Section of Primary Schools	9	6	1	1
Vocational Schools which provide Continuation Education	246	218	27	17
Comprehensive Schools	14	14	2	2
Preparatory College	1	1	0	0
Community Schools	20	20	3	3
Total	827	783	100	66

The Question. Each principal was asked to supply two critical incidents. The first incident was requested from the previous week (immediate past) and the second from the previous three to four months (recent past).

Respondents were requested to fill in their answers on a prepared form. The questions asked to elicit the response were:

1. What was the most difficult task or situation you had to deal with during the past three to four months? (Please outline giving as much detail as possible - background, relationship

to you etc., the situation does not have to be unduly complicated or highly dramatic - it can focus on events which occur fairly frequently as part of your day-to-day routine).

2. Approximately how often do you have to deal with a difficulty of this kind? (e.g. once or twice a day, once or twice a week, or once or twice a term).

Effective and Ineffective Incidents. The respondents were not asked how they solved the problem stated in their critical incident. They were asked only to state the problem, and to give sufficient background to form an understanding of the problem. A number of respondents, however, volunteered this information and stated outright that the solution they applied was effective or ineffective. In other cases it was possible to form a judgement as to the effectiveness or otherwise of the solution applied. In a number of other cases the problem itself may refer to an ineffective situation within the school, e.g. a poor heating system or lack of maintenance, but no clue is given as to where the responsibility lay for these problems. In such cases no judgement was made.

In this study it was possible to decide on the effectiveness or the ineffectiveness of 85 incidents. (72 per cent of admissable incidents).

TABLE 2

Number of Critical Incidents Contributed	120
Number of Critical Incidents Accepted	116

Once collected, incidents were categorised into five categories (Table 3).

TABLE 3

Nature of Task	Frequency	Immediate Past	Recent Past	Effective	Ineffective
1.Dealing with students	51	28	23	24	14
2.Dealing with staff	42	17	25	3	23
3.Dealing with maintaining plant or office	9	3	3	-	8
4.Dealing with adverse weather conditions	7	7	-	-	6
5.Dealing with long term planning	7	-	7	4	3
Totals	116	55	61	31	54

Analysis and Discussion

Category 1. Dealing with Students

The Tasks. The principal spends most time dealing directly with students. (In this study 44 per cent of incidents collected fall into this category). The problems are either of a disciplinary nature, which range from the trivial to the more serious leading to expulsion from school or those which might properly be called pastoral in nature. There is no clear distinction between the two - any drawn in this study represents the principal's bias in reporting the incident. A full listing is not possible here but the problems revolve around student underachievement, poor motivation, conflicts between parents, teachers, students.

Principals' concerns. Principals express concern for a wide range of issues. They are concerned that students' needs are catered for adequately, they are concerned about the general discipline of the school, with schools' neighbours, with parents and with the public in general. They are concerned with supporting staff in the discharge of their duties and with establishing structures within which problems can be solved.

Category 2. Dealing with Staff Problems and Concerns.

The problems encountered by principal in relation to staff are varied. The principal is, in many senses, the final arbiter of difficult situations in relation to staff's day-to-day relations with students, with parents and with outside authorities, and in their interpersonal relationships with each other. The problems presented here are in a form that seems logical to the researcher and not in the frequency of their occurence. These problems are in relation to:

(i) the appointment of teachers to positions of responsibility;
(ii) teacher assessment;
(iii) teachers' lack of class control;
(iv) pastoral care;
(v) inconsistent or unrealistic behavioural objectives set for students;

(vi) staff absences;

(vii) inter-personal conflicts.

Category 3. Dealing with Problems of a Maintenance or Clerical Nature.

8 per cent of the 116 usable incidents are concerned with the principal having to address himself to problems of a clerical, book-keeping or plant maintenance nature. Seven of these nine are from principals whose schools do not exceed 300 pupils and where full-time clerical or maintenance services are not available.

Category 4. Dealing with Adverse Weather Conditions:

Type of Problems Encountered and the Principals' Concern. At times of severe weather conditions, roads are often impassable, heating systems either cease to function, or do so inadequately. Principals have to cope with a host of problems arising out of these conditions. Solutions to these problems are hindered by poor communication systems, between school and transport companies and between school and staff. Principals are often left to cope with students in poorly heated classrooms with only a portion of staff.

Category 5. Dealing with Planning.

Type of Problem Encountered. Incidents reported here deal with problems principals have in setting up a new school, or of changing the orientation and philosophy of a traditional type of school. The problems encountered in so doing are major. Curriculum change and the developing of new curricula lead to many problems for principals.

Principals act as secretaries to Board of Management, and are at the same time, the chief executives of these Boards. They have a function in formulating and implementing school policy. Problems encountered here are of communication with the Boards of Management and in assisting them fulfill their roles in deciding school policy.

Principals encounter financial problems in implementing school programmes. The responsibility to provide for all their students and their inability to do so, for financial reasons, are a major worry to principals.

Analysis of Research Findings

This study set out to define the task of the principal in the second-level school in the Republic of Ireland. It put forth the hypothesis that the principal's perception of his role is such that he is not performing the task of an educational administrator. It is the judgement of this researcher that more often than not the hypothesis is sustained.

Category 1, deals with 44 per cent of all usable incidents. There is evidence of role definition and structures to cope with problems in 20 per cent of the incidents. There is also clear evidence of no such role definition of structures in 61 per cent of such incidents. In the remaining 20 per cent of incidents there is no direct evidence to support either case. Where roles are defined there is evidence of a planned, co-ordinated approach to problem finding and problem solving. Where roles are not defined, principals are seen to be personally involved in solving routine, everyday problems, without recourse to, or assistance from, other staff members. Furthermore, the evidence suggests that staff who act without role definition act in one of three ways: they narrow their own role specification to such an extent that they are engaged in teaching a prescribed curriculum in its narrowest sense, and do not offer pastoral care to students, or secondly, they over-extend their role into areas that properly belong to others, which subsequently forces them to withdraw in frustration, and embarrassment, or thirdly, they are erratic in their own behaviour and inconsistent in their behavioural expectations of students.

Category 2, deals with staff related tasks. There is no evidence of role definition or of structures for interaction in any of the recorded incidents. In 69 per cent of problems dealt with, there is sufficient evidence to suggest that these problems may not have arisen had defined structures been maintained, and had role incumbents been aware of and understood clearly their roles.

The most frequently quoted incidents recorded in this category refer to problems associated with staff absences and the need to provide satisfactory replacements on short notice. It is obvious, that each school attempts its own solution but never with any degree of satisfaction. Could it be that solutions can be found when education administrators act in a co-ordinated manner on this and other problems?

A more serious, if less frequently recorded problem facing principals is their lack of a clearly defined role in teacher evaluation. This causes considerable frustration to principals. There is some doubt as to how assessment is understood. Two recorded incidents suggest that assessment ought to be used in a punitive sense.

When the above tasks are considered as tasks of educational administrators there appears to be a wide gap between the tasks undertaken by principals in this study and those of an educational administrator as defined in the literature. It is also clear from the information provided that the principal chooses to be used to solve difficulties that could and ought be solved at another level, and most often by the teacher. From the frequency of referrals of a relatively minor nature, dealt with by the principal, it appears that few principals have initiated structures which allows for staff to play a meaningful role in solving their own or students' problems. Time and again we see the principal expanding his role, or allowing his role to be expanded, in this manner. This seems to be so because the principal has not defined his own role for staff with any degree of clarity and because staff have not, with the principal's assistance, defined their own role. Consequently problems are referred to principals as a first resort or the teacher exceeds his assumed role, and is in conflict with the principal's role. In such situations, teachers cannot engage in the creative expansion of their roles and as a consequence, their potential to act with confidence is lessened. This also diminishes their opportunity to gain job satisfaction and causes a lessening of the quality of education offered. As in the previous category, principals experience considerable difficulty with teachers who are unable to set and maintain realistic behavioural expectation for students. In such cases principals do not perceive themselves as having a role to play in assisting staff define such expectations within the context of an overall plan. Another problem that arises frequently in Category 2 is that associated with matching personality and role expectation to role. Allied to this is the implicit reluctance of principals to play an active part in staff development.

Category 3, deals with maintenance and clerical problems. In one of the nine incidents considered here, the principal acts in an administrative capacity. In the other eight, he is seen as a juggler of the timetable, a maintenance mechanic, a book-keeper or a bus driver. What is clear from this category is that a considerable expenditure of time is spent on exercises that are not in themselves proper to an educational administrator.

Category 4, is a litany of chaotic occurrences surrounding the inability of schools to cope with severe weather conditions. It is no reflection on the principal that these conditions occur annually. It is reasonable to expect, however, that policy should guide school personnel in their actions in coping with associated problems.

Category 5, deals with planning. It is significant that only 7 or 6 per cent of all usable incidents, dealt with this most important function. It is also significant that the principal is judged to have acted effectively in 4 of these incidents. Of the other three, one deals with the principal attempting curriculum innovation without adequate planning or staff training, another deals with a principal's problem in not having sufficient finance to cover expenses and the last sees the principal in the extraordinary role of protecting the school ethos from well meaning but in the principal's view, misguided staff members.

It is logical to conclude that principals who have not defined their own role or who have not assisted staff define theirs, or who have not initiated structures in interaction for those engaged in the service of the organization, have not fully understood or have not accepted their most fundamental responsibility which is to engage in the process of defining aims for the school. It is unreasonable to expect a coherent, decisive, organized and effective approach to educational administration until aims are defined, understood and accepted. It is only within such a context that objectives can be set, roles defined and structures initiated. Failure to do so means that schools work to some ad hoc set of aims which allow them to continue to survive but at great cost to the individuals in the organization. Principals are so engrossed in solving day-to-day problems that their time is preempted from dealing with the broader, more fundamental aspects of their work. This large scale failure of principals to perceive their roles as educational administrators can only lead to frustration, duplication of effort, a diminution of quality of service and a lessening of individuals' opportunities for personal and social fulfillment. In the small number of instances where principals act as educational administrators the evidence suggests that they do so effectively.

Recommendations

There can only be one important recommendation to make that may help further the cause of educational administration in the Republic of Ireland, and that is,adequate training in educational administration must be provided to principals prior to their taking up duties as principals, that those already in office be required to engage in in-service training, and that all be encouraged to keep themselves continuously abreast of developments in educational administration.

A subsidiary recommendation is that the role of the principal be enlarged to include staff assessment. It is the researcher's considered opinion that this would assist principals and teachers alike in defining the objectives which they aspire to and may also assist in deciding how these objectives may be attained.

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PROFESSIONALISM AND IDEOLOGY IN TEACHING:
A SURVEY OF TEACHERS IN NORTHERN IRELAND

Alex McEwan

Introduction

The paper presented here deals with the sociology of professional knowledge. Its central theme concerns the role of the teaching profession as it interprets and transmits relationships of power. The theme is elaborated by examining its role in the distribution of knowledge through the educational curriculum. Such knowledge, it is argued, is intimately bound up with the relationships of economic, political, cultural and social power. Ideologies are consequently generated as different competing groups promote their interests over others for the allocation of resources and power. Competition for such allocations and distribution of economic and material resources can often be accompanied by a similar competition between the cultural, social and political ideologies of contending groups. Thus relationships of power and regulation in a society which chiefly concern the allocation and ownership of its material resources, produce ideological "messages". These, in turn, relate to, and influence cultural ideas, political beliefs and social values. The "messages" are concurrent with, yet latent within the transmission of knowledge through such agencies as newspapers, films, television and schools.

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As a result of its role in the transmission of ideas and values, the teaching profession practices within both epistomological and ideological contexts. Teachers are publicly committed to remaining politically, culturally and socially neutral, and to avoid claims that the profession is biased or promoting any form of sectional interest. In order to do this, teachers must "unscramble" the ideological messages by which they are surrounded. This paper puts forward the argument that becoming a teacher entails learning a number of frameworks through which classroom practice and the curricula is viewed. These frameworks enable the teacher to focus upon ideologies and ideas so that certain aspects are included and others excluded from his/her professional work. An attempt is made here to elaborate the professional ideology of teaching by the construction of a model of teachers' socialization that focuses upon the acquisition, by the teacher, of a number of ideological frameworks. These enable the profession as a whole to concentrate upon areas of potential and actual ideological dispute in such a way as to protect the "neutrality" of its practice.

Professional Ideology in Teaching

Teaching is a profession which has a crucial position in the interpretation and mediation of relationships of power. It does so as teachers transmit knowledge through the educational curriculum which, it was claimed earlier, contains ideological "messages". The "Hidden Curriculum" is a general term that has been used to describe the implicit cultural, political and social currents contained within the officially neutral curriculum based upon universalistic values. The argument presented here shifts the emphasis away from an analysis of curriculum content to the procedures evolved by the teaching profession to interpret and diffuse political disputes, cultural discontinuities which are built into the curriculum and social ideologies.

The profession manages its practice in relation to social, cultural and political ideologies through a form of professional socialization which consists of acquiring a number of ideological frameworks. By its nature the form of professionalization is not catered for in pre-service or inservice training; it is also predominantly colleague based. For the purposes of creating a model of the relationships between teaching and ideology, four main ideological frameworks are posited. The first is academic and is chiefly concerned with the way in which teachers view the nature of knowledge as they deal with it in their practice. An academic framework is an important aspect of a teacher's practice since, it can be argued, many teachers attain "a professional identity" through a particular academic subject. It can also be claimed that it is the means by which relations of power are reflected in a society. This is to argue that one crucial distinction between "academic" and "non academic" knowledge, and similarly with the types of individuals who are seen to "fit" into such categories, underpins a person's "life chances". Access to the two different classifications of knowledge is closely associated with access to power in the realm of material production. Access to an academic classification is vital to obtaining entry to a range of occupations close to the sources of power and which also administer and regulate the relationships which follow on from its distribution.

From the viewpoint of the teaching profession an academic framework will bring into focus the rationale which underpins the distinction between the different classifications and the organization of knowledge in curricula; it will also focus upon the concept of ability, how it can be defined, and at what stage of an individual's development it can best be identified. Such a framework will also, it is suggested, influence attitudes towards the differences in educational treatment which "academic" and "non-academic" pupils should receive. An attempt is made to explore these questions empirically.

The second part of the model is concerned with pedagogical and professional practice although it needs to be stressed that the academic and pedagogical framework mesh together at many points. There are two aspects to this, classroom practice and collegial relations. Teaching skills relate to a number of aspects of classroom practice, e.g. the physical organization of pupils and equipment; the quality of relationships which obtain within a classroom. The skills involved are defined within more general contexts in a society. For example, these will consist of macro-sociological considerations with regard to children and their educational and personal rights. The changes in school "atmosphere" over the last 100 years, and more particularly the last 15 years, reflect the development of awareness generally about such issues.

Teachers' perceptions of pedagogy afford some insights into the relationship between professional values in teaching and their macro-social and ideological parameters. In other words, general ideological forms which mediate relationships of power also regulate, in significant ways, the freedom of the teaching profession to generate an autonomous system of professional values in relation to pedagogy. Teaching reflects a number of competing interests, for example "the needs of industry", "education for peace" and so on. Bowles and Gintis[1] claim that teaching mirrors in a direct way, the needs of industry. They argue that this is not so much in the context of providing industrial skills and techniques, as in the promotion, through pedagogy, of appropriate attitudes in pupils. Accordingly, they point out, a teacher's professional autonomy, with regard to pedagogy, is limited by the need to socialize pupils into relationships of subordination and control whilst still at school. The hierarchical ordering of school, they observe, in terms of the "top-down" model is concurrent with the type of organization and pattern of relationships which most pupils will experience subsequently at work. Sharp and Green[2] also observe that "progressive" approaches to pedagogy tend to lapse into traditional hierarchical patterns, whilst formally opposed to elitist and authoritarian perspectives.

In an influential paper Davies[3] argues that education in terms of pedagogy and academic aims, concerns the "management of knowledge". Although this concept is not spelt out at the level of ideological forms, nevertheless, it points out a way of conceptualising the role of the teaching profession, which is different from a traditional systems approach concerned with the relation between education, social mobility and stratification. Davies argues that education creates the epistemic conditions for the acceptance of social mobility and equality of educational opportunity as legitimate educational ideologies. Through education, political goals and idelogies are translated into educational ones as comprehensivization, destreaming, integrated curricula and at a later stage the increasing access to knowledge by adult education. Davies critically directs attention towards the ways in which the creation of such educational ideologies assist the management of deep structural contradictions which stem from the relationships of, and struggle for, power. Educational ideologies such as comprehensivization, equality of opportunity, progressivism, community education and so, are marginal in so far as the basic relationships of power militate against their proper fulfilment. At a surface level educational opportunity, it could be claimed, is a legitimate, achieveable goal based on the principle of merit. It could be counter-claimed, however, that the meritocratic "sorting line" has historically been advanced or retarded as a function of the starter's socio-economic class.

Davies' arguments lead into the third proposed professional-ideological framework which enables the profession to focus upon social, political and economic ideologies. The academic lens posited earlier is also of relevance here since, at a general level in a society, power and knowledge are closely linked. Thus, control over the knowledge contained in the educational curriculum which teachers transmit and interpret, will lie between the profession and the ideological constraints which legitimise and mediate existing distributions of wealth and resources. A social framework will contain elements which concern the profession's relationship with social structures. For example, ideas relating to the allocation of resources to teaching in terms of salaries, equipment, capital development and so on. The lens will also facilitate inter-profession comparisons along a number of dimensions, viz, qualifications, status, prestige, remuneration and conditions of service. Principally, the lens will focus the profession's attention upon its role in the transmission of knowledge which in other social, political and cultural contexts is disputed over, challenged, and perceived as controversial or contentious. This point raises a question concerning the procedures which the teaching profession develops in order to deal with political ideas, moral values and theories of social change. There are examples of areas of knowledge whose values and ideas pupils need to be socialized into in order to participate politically, morally and culturally in a society. The profession has to deal with such areas of knowledge which in non educational contexts are disputed over and in contention. This is particularly the case with regard to the differentials implicit within economic, political and social contexts and represented educationally by differences in types of schools, private/state schools, types of curricula, academic/vocational and levels of access, streaming/mixed ability. The social framework enables the profession to focus its values and pedagogy upon ideological forms and their implementing ideologies which mediate existing relationships of power. It also enables teaching to diffuse actual and potential areas of dispute, as they affect classroom practice.

A personal ideological framework is the fourth and last proposed component of a model for the teaching profession's treatment of ideologies. It is an attempt at avoiding too structural a conceptualization of the teaching ideology relation and is influenced by phenomenological perspectives in sociology. Although such perspectives have been criticised by Sharp and Green[4] in connection with teaching, nevertheless, it can be argued that the concept of ideology has a psychological quality. This point refers to the individual world-view which each teacher brings to his or her work.

Within teaching, this framework will focus upon the relationship between personal and professional standards; it is the unique ideological package which each teacher brings to his or her craft. There are a number of phenomenological features of a personal framework. There is, for example, the attitude of each teacher to the activity of teaching, the quality of, and attitudes towards, the relationships which they develop with pupils, how sensitively are they treated? What are the personal and professional limits placed upon the scope and development of such relationships? Another aspect is concerned with subject identity. In other words, how far does a subject identity determine a person's definition of him or herself qua teacher. The idea of vocation is also an element of a proposed personal lens and relates to the level of commitment which individual teachers bring to their practice. Leggat[5] has argued that teaching, compared with other professions such as medicine or law, has been characterized by a low level of commitment. This phenomenon involves attitudes to children, colleagues, commitment to a subject and also to the aims of the profession.

In summary, the arguments set out here have been directed towards the construction of a model of teaching which is informed by a theory of ideology which enables the profession to focus on the ideological backgrounds to its practice in such a way as to minimize connections between political and educational issues; between levels of access to knowledge and life chances and also enables the diffusion of explanations of the community-based nature of educational success and failure. The construction of the model has employed the concept of professional ideological lenses which enable the profession to focus upon general social, political, cultural and economic ideological forms. It has also been argued that the teaching profession is strategically important for a society's continuation, in its role of interpreting ideological representations which connect relationships of power and production with the classification and distribution of educational knowledge. The present model is an attempt to conceptualize both a process of professional socialization and, within the profession, a continual monitoring of its treatment of ideological forms. This is of great importance to teachers since historically they have been anxious to promote and retain ideological neutrality as a professional ethic. The argument advanced is that frameworks operate in such a way as to translate areas of actual and potential ideological dispute into acceptable professional practice.

Empirical Approaches: Pilot Work

Two methods were used to investigate the frameworks hypothesis: interviews and a questionnaire study. The interviews were carried out over a period of four months with a group of twelve teachers. The decision to interview was an attempt to "ground" the theory in the ideas and activities of the practitioners themselves. Glaser and Strauss[6] argue that theory in scientific research must be based upon the experiences of people as they work, interact and so on. Theoretical ideas, they argue, should not be allowed to dominate the progress of research without first being cross referenced with social participants' understanding of social reality.

The interviews were, therefore, designed to create an instrument which integrates both the investigator's nascent conceptual framework and the teachers' reflections on their practice. Finally, the interviews were aimed at penetrating the deep structural components of professional practice in order that items for a questionnaire analysis could be obtained. Semi-structured interviews were used during which respondents were asked their views on a range of topics centring around the four lenses. This approach stems from the work of phenomenological sociologists who favour a deep-structural probing method of empirical research.[7]

As a result, a preliminary questionnaire was compiled containing 62 items and mailed to a pilot sample of 300 teachers. A stratified random type of sampling frame was used, which included teachers from primary, secondary (non-selective) and grammar (selective) schools; male and female teachers; teachers in religious foundations, and teachers in state schools. Within these categories respondents were chosen by means of tables of random numbers in the designated geographical region. The sample of 303 represents 1/15 of the total number of teachers in Northern Ireland. Respondents were asked to reply to each item according to a five point scale ranging from Strongly Agree, Agree, Don't Know, Disagree, Strongly Disagree. This procedure was aimed at producing a reliable Likert scale.

The return rate of questionnaires was 72.36 per cent (N = 220), which represented an adequate basis for analysis. Two procedures were performed on the returned data (a) an item analysis using Cronbach's Alpha technique,[8] (b) a factor analysis in order to see whether or not the lenses were emerging and to estimate the usefulness of the lens hypothesis for further analysis with a larger sample. The former technique resulted in the rejection of 21 items. The factor analysis (Varimax) resulted in the extraction of 13 factors with an eigen value greater than 1; items with loadings greater than ±0.3 were treated as significant.[9] The factors fell into three main groups which reflected the academic, pedagogic and social domains of the lens hypothesis. There was no significant emergence of a personal domain.

Main Sample

On the basis of the results of the pilot study it was decided to sample a larger population of teachers in order to fill out the professional-ideological lens approach and, at the same time, to test its validity. The main sample used the same sampling frame as the pilot, but with 5 per cent of total numbers of teachers in the same area (N = 911). Its main objective was to look for areas of agreement along the lines suggested by the model amongst the sample population, this was pursued by means of a factor analysis (Varimax). The Statistical Package for Social Sciences[10] was used for the procedure. The return rate was 57.8 per cent (N = 527) which was lower than the pilot sample, but still provided a sound basis for analysis.

The Factor Analysis

A principal components analysis with Varimax rotation and Kaiser Normalization was used for the main sample. After rotation 5 factors emerged with an eigen value greater than 1 (Child[11] recommends rejection of factors with an eigen value of less than 1) together they represent 62.4 per cent of the total variance in the responses.

Description of Factors: Factor I 19.4 per cent of Variance

(a) One of the ways of distinguishing professions from other occupations is the profession's adherence to a system of ethics connected with its work. (Factor loading = 0.52).

(b) A formal code of conduct should be part of every teacher's professional knowledge. (Factor loading = 0.78).

(c) In general there are accepted basic professional skills which all teachers should share. (Factor loading = o.37).

This factor indicates that the responses clustered around an awareness of the significance of professional status and the prestige attached to a profession. It also demonstrates the importance of presenting the work of the profession's practice to the public through the generation of, and adherence to, a system of rules or ethics. The factor seems also to indicate that a system of ethics for teaching would have its foundation in the pedagogical elements of the profession. Taken as a whole, Factor I appears to be within the pedagogic and social ideological frameworks. There is a keen awareness among the sampled teachers of the importance of a system of ethics for a profession which, for teachers, appears to fall within the pedagogic context.

Factor I can be designated as a Professional Identity Factor. It raises questions concerning the elements of professional conduct and the values which could make up a system of professional ethics for teaching. It is also concerned with the teaching profession's public esteem.

Factor II

This accounted for 15.4 per cent of the total variance, and had the following questionnaire items:

(a) An all-graduate teaching profession would have more prestige than a graduate and non-graduate one. (Factor loading = 0.71).

(b) The professional status of teachers would be enhanced if they had control over who entered the profession. (Factor loading = 0.49).

(c) The first degree represents the minimum desirable qualification for teaching. (Factor loading = 0.68).

From this result it appears that the teachers sampled, link the prestige of the profession with its academic standing. Items (a) and (c) above clearly link professional prestige and academic qualifications whilst item (b) indicates that full recognition as a profession is linked to some form of teacher-based regulation of the entrants to the profession. Factor II can be designated as a Professional Status Factor.

Factor III

There are four components in this factor, which accounted for 10.5 per cent of the total variance.

(a) Ability at academic subjects accurately determines a pupil's potential for future job success. (Factor loading = o.39).
(b) The chief characteristic of an academic curriculum is that it is highly theoretical. (Factor loading = o.37).
(c) The subjects of the curriculum can be arranged in a hierarchy with respect to their academic prestige. (Factor loading = 0.51).
(d) Working with one's brain carries more prestige than working with one's hands. (Factor loading = 0.42).

Factor III has a clear academic theme running through it. It can be designated as an Academic Prestige Factor and indicates that professional prestige is strongly linked to the profession's use and command over theoretical and highly academic knowledge. The factor also suggests that the practical application of bodies of knowledge is not the predominant concern of the academic or subject-based curriculum. It appears that a strong dichotomy exists within the profession between theory and practice as represented by different types of curricula, for example academic/non-academic; non-vocational/vocational; subject-based/integrated. It is justifiable to conclude that an academic professional lens is a significant determinant of a teacher's view of his/her practice.

Factor IV

This factor has four contributory items and accounted for 9.2 per cent of the total variance.

(a) Teachers have a contract with society in order to introduce children into generally accepted social ideas. (Factor loading = 0.31).
(b) The needs of the economic system should directly influence what is taught in schools. (Factor loading = 0.44).
(c) The needs of industry are not sufficiently taken into account by the teaching profession. (Factor loading = 0.40).
(d) A professional identity in teaching is best obtained through the development of one's own subject. (Factor loading = o.32).

Factor IV points to an awareness of the teaching profession's "contract" with the society in which it practises. Item (c) indicates that the teachers sampled are keenly aware of the inter-relationship between industry and schools. Item (a) demonstrates that teachers also take seriously their social and cultural responsibilities in the transmission of ideas and values. However, item (d) suggests that the profession needs to keep its intellectual purpose in mind. This could be interpreted as maintaining a balance between the profession's social-cultural contract and its intellectual purpose. The factor can be designated a Social Responsibility Factor.

Factor V

This is a "unique" factor with only one item, accounting for 7.8 per cent of total variance.

(a) Given proper resources there is no reason why all pupils could not benefit from higher levels of knowledge. (Factor loading = 0.76).

The factor appears to suggest that teachers see themselves, as a profession, insufficiently resourced. It can also be interpreted as reaffirming the profession's aim of pursuing intellectual values. In other words, the teachers sampled feel that the intellectual goals of the profession remain insufficiently realized because of the lack of resources invested in it. The factor can be described as an Intellectual Value Factor.

Table 1 Summary of Factors

Factor		% of total Variance	Lens Domain
I	Professional Identity Factor	19.4	Social/Pedagogic
II	Professional Status Factor	15.4	Academic/Social
III	Academic Prestige Factor	10.5	Academic lens
IV	Social Responsibility Factor	9.2	Social lens
V	Intellectual Value Factor	7.8	Academic/Social

The factors reflect some of the ideas expressed in the framework approach in so far as they can be cross-referenced with the pedagogic, academic and social aspects of teaching. However, it appears from the evidence that the professional-ideological framework outlined in the lens approach is more complex than at first envisaged and is in need of greater refinement. This is suggested by the difficulties of interpreting tho factors themselves and also of fitting them neatly into the frameworks. The pedagogic framework, for example, appears to contain elements concerned with academic and intellectual values. This might have implications for the debate in teacher education concerning professional and academic studies. The proposed academic framework also contains social elements and may provide insights into the ways in which the teaching profession copes with the sorts of difficulties raised by current discussions on the politics of schooling. It appears that formally the profession is committed to the separation of academic and social/political ideas, but that informally it is aware of the ideological overlap and has evolved a professional ideology which depoliticises its work. The ideological frameworks model suggests a way in which teachers become socialized into a professional ethic of neutrality with respect to political, moral, curricular and cultural issues.

Conclusions

The main theme of this paper concerns the nature and role of ideology as it applies to the teaching profession. Historically, teaching developed in tandem with the provision of education on a mass scale. The nineteenth and early twentieth centuries have been a period of rapid and profound changes in the form of production and in the nature of economic relationships as a capitalist method of production became established. Consequently, the control of power has shifted from a predominantly rural and aristocratic base to control by an industrial owner class and also a developing middle class. As a further consequence, it is claimed, a process of ideological penetration and transformation was generated and concentrated upon the new class of urban factory worker in order to establish new methods of production and to justify shifts in the distribution of power and wealth. The developing teaching profession was in the forefront of such ideological, cultural and social changes during this period. Education was thought of, by those in power, in terms of separate systems which coincided with the changes in class structure; a system for the poor (the elementary schools); another for the children of the owners of wealth and land (the endowed grammar and public schools).

As the profession developed, the ideological role of teaching became, if not less significant, much less apparent. The manifestation of ideological forms also became more latent and was accompanied by movement towards greater professionalization on the part of teachers. The different school systems have also increasingly converged during the twentieth century although the segmentation of professional organizations amongst teachers, reflects still earlier class based distinctions between the schoolteacher (elementary) and schoolmaster (grammar/public). Nevertheless, despite such latency in ideological terms and the less overtly class-based approaches to education, it is still the case that the nature, control and distribution of wealth, knowledge and material power in contemporary societies, need to be defined and legitimated. To this extent, the teaching profession performs a crucial role as it deals with ideologies which surround and mediate definitions and legitimations of material, cultural and political power. Such ideologies, it is argued, mediate the relationships and distribution of power by rendering them, for example, as rationally or scientifically based; socially and politically for the "common good"; educationally, through meritocratic ideologies and universalistic epistemologies of the curriculum.

The results of the questionnaire survey indicate the presence of five professional-ideological factors, which taken together suggest a model of teaching that affords insights into the profession's way of neutralizing potential areas of dispute. The function of the framework could be to enable members of the profession to separate the features of the ideological background and thus produce an atomized view of educational, social and pedagogic questions.

The findings of the research presented here can be interpreted as linking the concept of professionalism in teaching, with the creation among members, of a professional-ideological framework. The framework, it is argued, enables the profession to develop a degree of consensus concerning ideologies which surround political ideas, social values, cultural ideas, moral theories, the distibution of economic power and legitimation of existing allocation of wealth. The lens hypothesis puts forward the view that by acquiring the lenses teachers are sensitised to those aspects of political, moral and social ideas that are relevant to the classroom and to those which could be interpreted as controversial or inappropriate for the school curriculum. In more general terms the lenses diminish the connection between politics and education, guard against claims of moral bias or indoctrination and maintain teaching as a socially neutral activity. It is also consistent with this approach for established hierarchies of academic prestige and their correlations with occupational rewards and status as unconnected and unproblematic. This can be observed in the profession's large measure of consensus on these issues, they are also related to ideas on intellectual values of subjects, the nature of academic knowledge and the academic child. These issues are, perhaps, worth pursuing in greater detail. Factors II and III, for example, account for 25.9 per cent of the total variance, and seem to indicate that the teachers sampled, although from different types of school, have formed a consensus concerning the features of academic/non-academic knowledge and pupils. Such a professional ideology has a crucial bearing upon the educational and subsequent life chances of the pupils they teach, since this distinction remains close to the hierarchies which characterize the present occupational structure. They are also closely related to contemporary definitions and legitimations of power. Access to different types of curricula (academic/non-academic) are crucial to occupational placement and, at the same time, significantly shape a person's relationship with, and insights into the sources of power. To this extent, therefore, the teaching profession acts as a powerful regulator of access to the sources of power. In so far as this argument holds, the profession occupies a vital position in the relationship between professions and power.

Further research into the topic outlined in this research is needed to unravel the apparent complexity of the relationship between ideology and professions. This could be directed at investigating the constitutive elements of each lens singly and thus filling out each in greater detail.

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SCHOOL SYSTEMS AND PUPIL OUTCOMES

J.A. Wilson

Introduction

Compulsory enrolment in full-time education ends at the age of 16 in Northern Ireland, and age 16 is also the stage when pupils sit for their first public examinations. This study is about an age-group of 16-year-olds who had experienced different school systems, about how they fared in their public examinations and about whether or not they remained in full-time education after 16. It is part of a longitudinal study which began with some 3,000 pupils transferring from primary to secondary education in 1975. In 1975 these pupils had transferred to four school systems which at that time represented the range of secondary school organisation in Northern Ireland. By 1980 the same pupils were enrolled in five systems, four of which were school based and one of which was further education.

Since the study is about whether examination performance at 16, and staying on after 16, are related, as outcomes, to enrolment in the different systems, it may be described as a study of system effectiveness. As such, it has much in common with studies of school or teacher effectiveness. For this reason Gray's (1981) series of questions with regard to assessing the merits of studies of school effectiveness are equally relevant to a study of school systems. Gray's questions, transposed to the context of school systems, are four in number.

1. What evidence is there that successful systems are consistently successful?
2. How large an effect do systems actually have?
3. What are the best outcome measures for assessing effectiveness?
4. How can we adequately control for system intakes, since the key question in such research is whether systems with similar intakes produce different results?

The issue of appropriate outcome measures is particularly important. For example, should educational effectiveness be viewed in purely cognitive terms or are other forms of outcome worth considering? Rutter and his colleagues (Rutter et al.1979) used 'school attendance' as an outcome variable and the present study has used 'staying on in full-time education after 16' as of self-evident importance at this stage in young people's lives. Within the cognitive area Madaus et al. (1979) have argued that public examination results are more appropriate to an investigation of schooling differences than are objective tests, which are nearly always constructed in such a way as to minimise schooling effects. In the present study examination results at 16 (in GCE, CSE and RSA examinations) have been used. However, this raises the further question of whether an examination-based criterion is equally appropriate to all systems in the study, particularly if it is established that different systems have different goals, not all of which give the same weight to examination success, and, indeed, not all of which prepare pupils for the same examinations.

The question of whether or not a particular group of schools, or a particular school system, is consistently successful is a difficult one, if only because very few effectiveness studies are replicated. However, a possible corollary to that question, and one which is equally important for effectiveness studies, is to ask whether or not an identified system or schooling effect is sustained to a late stage. In the present study, for example, it would be appropriate to ask whether, if a schooling effect is apparent at sixteen, that effect is sustained or carried through to eighteen or beyond.

The Present Study

The 1975 cohort of some 3,000 pupils was chosen to represent the intakes to four secondary school systems in Northern Ireland. There were the grammar schools, the secondary intermediate schools, the junior high schools and the comprehensive schools. The grammar and secondary intermediate schools represented the prevailing selective system to which over 90 per cent of all 11-year olds transferred in 1975. The junior high schools were the first tier of the Craigavon two-tier system in which selection at age 11 has given way to selection at age 14. At that stage one in three of the pupils are selected for senior high schools and O-level work and the remaining two-thirds transfer to further education for vocational courses. The fourth system of bilateral or comprehensive schools included the two Belfast Model Schools and a few rural schools which offered a curriculum for the full ability range.

Since 1975 the cohort of 3,000+ pupils has taken part in three investigations. The first of these, reported by Spelman (1979), was concerned with pupil adaptation to secondary schooling in the first year after transfer. The second investigation, by McKernan (1981) was concerned with transfer at 14 within the Craigavon system. The third investigation, which is currently in press (Wilson, 1982) was concerned with the cohort's

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educational progress at 16. The present paper is based on the last of these studies and, like its source, it also draws heavily on the evidence from the earlier studies. As a longitudinal study, it seeks to interpret examination performance at 16, and remaining in full-time education after 16. In the light of pupils' educational progress and promise from the stage where they first entered secondary education.

When the cohort entered the four school system in 1975 it comprised three distinguishable groups. There were those pupils who qualified in 1975 for a grammar school education and who formed the majority of grammar school pupils. There were those who had failed to qualify and who therefore formed the majority of secondary intermediate school pupils. There were those who had not entered for the 11+ Selection Procedure and who formed the majority of the junior high school intake. Between then and 1978 some of those who had failed to qualify in 1975 were qualified by the Review Procedure. At age 14 one in three of the junior high school pupils was selected for senior high school. At age 14 the majority of the remaining junior high school pupils transferred to further education to which also a further number from the other school systems transferred at age 16. By age 16, therefore, the cohort, which now represented the results of selection at age 11 and 14, together with a form of continuous selection from ages 12-14, was enrolled in four school systems together with that of further education. The four school systems were now the grammar, senior high, secondary intermediate and comprehensive schools.

Examination Performance

In seeking to compare the examination performance of 16-year-olds across five school and further education systems two problems had to be solved. First of all, it was necessary to obtain a measure of examination performance which would take account of a range of public examinations at 16, from GCE and CSE to the commercial examinations of RSA. Such an index was obtained by weighting A, B and C grades in GCE as 3, 2 and 1 respectively, by weighting CSE grade 1 as 1 and by weighting an RSA Stage 11 pass as 1. This index was heavily biased towards GCE and, indeed, despite its weighting of GCE grades, it was found to correlate very closely with number of GCE passes.

The second problem was that of how to compare the examination performance of pupils across the different systems when it was obvious that pupils in the different systems formed separate populations. Pupils in the grammar and senior high schools had been selected for academic courses; those in the secondary intermediate schools had been rejected for such courses. Nor could it be assumed that qualified pupils in the comprehensive schools were strictly comparable with qualified pupils in the grammar schools.

In order therefore, to obtain a fairer basis for comparing pupils across systems a number of personal, educational and situational factors were examined and particular attention was paid to those factors which had a strong and consistent predictive relationship with examination performance at 16. These factors included such things as the sex and social status of the pupil, his or her attitudes to school, his or her performance at 11+ in the Selection Procedure, his or her progress in the first year of secondary education and the particular system in which he or she was enrolled in the fifth year of secondary education. Out of all these the two factors which related consistently to examination performance at 16, whether for the qualified, the unqualified, the Review qualified or those not entered for the Selection Procedure, were pupil achievement in the first year of secondary education and the sector in which the pupil was enrolled in the fifth year.

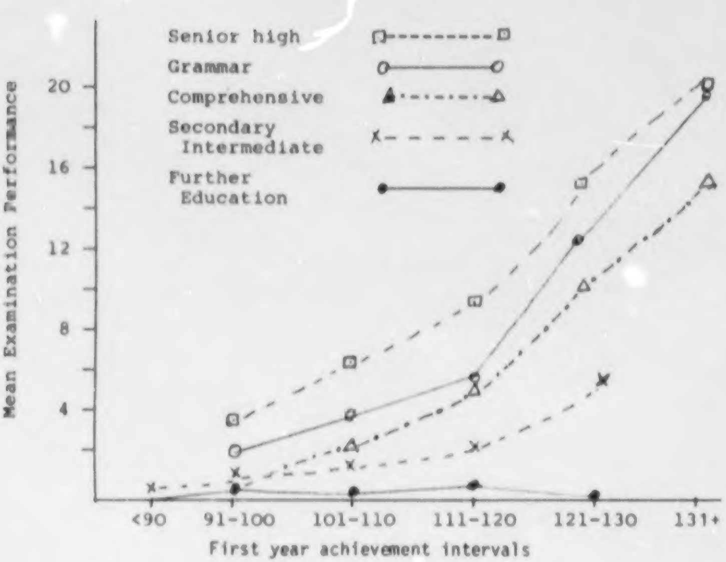
First year achievement was assessed by scaling pupils' performance in school examinations at the end of the first year of secondary education on a verbal reasoning test. This index of first year achievement proved to be a more powerful indicator of examination performance at 16 than was the 11+ Selection Procedure. In the regression model it also swamped the related effects of father's occupation and the pupil's attitudes to school.

As the single best predictor of examination performance at 16, first year achievement provided a basis for comparing examination performance across the five systems. The results of such a comparison are illustrated in Figure 1, where examination performance on the vertical axis is plotted against first-year achievement on the horizontal axis for each of the five systems.

While Figure I shows how pupils of equal promise (i.e. at similar levels of first year achievement) fared in each of the five systems, it has to be remembered that pupils did not have the same examination taking opportunities in the different systems. In fact, the levels of performance in the different systems correlate fairly closely with such opportunities. For example, while over 96 per cent of pupils in the grammar and senior high schools sat for GCE, fewer than 9 per cent of further education students sat for any one subject in GCE. Moreover, the examination index on which performance was judged is, as we have seen, heavily weighted towards GCE.

FIGURE 1

Examination Performance



Perhaps the most interesting comparison in the Figure is that between the grammar and senior high school systems. Both systems are comparably dedicated to GCE work and both had a high entry rate for GCE. However, the figure shows that at all levels of promise the senior high school pupils had the edge on their grammar school counterparts. This is particulary interesting in the light of McKernan's (op.cit.) evidence that senior high school teachers feel uncomfortably under pressure by reason of having - as they see it - only two years to prepare their pupils for the GCE O-level examinations, remembering that these pupils come to them from the junior high schools at age 14. The very pressures which the teachers resent may indeed result in heightening the achievement of their pupils. At the same time, this senior school superiority of performance raises two questions. Is this superiority sustained at the A-level stage and does it generalise to other years?

Staying on after 16

As with examination performance, staying on after 16 was examined by first of all asking what of the available information indicated most clearly the probability of a pupil's staying on into the sixth year of post-primary education. This revealed two things - first, that it was not possible to predict staying on at 16 with any degree of precision (the predicted variance ranged from 28 per cent to 47 per cent for different groups) and second, that the best of the available pointers to staying on were examination performance at 16 (with its correlated number of GCE passes) and the sex of the pupils. These relationships to staying on are illustrated in Figure 2, where rates of staying on are plotted separately for boys and girls against number of GCE passes obtained at 16.

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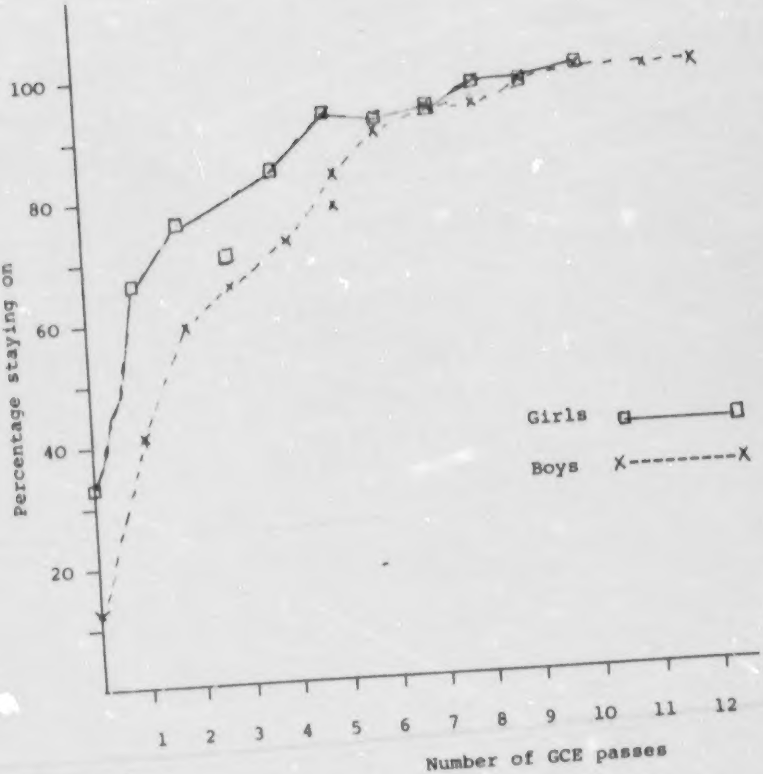
Figure 2 illustrates two interesting aspects of staying on. First of all, it is clear that the relationship between GCE performance and staying on is not linear - above a level of five passes for girls and six for boys the majority of both sexes stay on. GCE performance at 16 therefore operates as a threshold effect insofar as staying on becomes automatic above a given level, or levels. The non-linear shape of the curve helps to explain why staying on after 16 was poorly predicted by the GCE pass rate. Also, the threshold effect to which I have referred must owe something to the DENI regulations (Circular 1981/89) whereby a pupil who obtains a minimum of four GCE or CSE equivalent passes retains, or can qualify for, a non-fee-paying place in a grammar school. In short, qualifying at 16 is a further feature of selective education in Northern Ireland.

The other point of interest in Figure 2 is the marked sex-difference in staying on after 16. The greater incidence of staying on among girls at the lower levels of GCE performance, here illustrated, was also found consistently, in the grammar, secondary, intermediate, bilateral and further education sectors. The one exception was the senior high schools, where rates of staying on were comparable for the sexes.

This tendency for girls to stay on in greater numbers than boys parallels the general trend among 16-year-olds in Northern Ireland. In the further education sector it may well be related to the evidence (from this same study) that further education appears to be offering a more vocational curriculum to girls than to boys at this stage, given that many boys transfer to further education at 16 in order to repeat their GCE O-levels.

FIGURE 2

Staying on at 16



Discussion

Certain issues arising from the study deserve further comment. One of these has to do with the way in which the study controlled for system intakes by making use of an index of first year achievement in secondary education. Another concerns the limitations of examination achievement at 16 as a measure of outcome. A third has to do with educational opportunities beyond 16, in both full-time and part-time education - an issue which has been given a new importance in the shape of the Department of Education's recent policy document on full-time education for 15-18 year olds (DENI, 1982)

There were two advantages in using first-year achievement as a means of controlling for pupil differences between the systems. First year achievement correlated best of all with examination performance at 16 (better than did the 1975 Qualifying Procedure results) and it had the advantage of being available for most pupils, unlike the 11+ Procedure, for which not all pupils had been entered. However, first-year achievement is not a pure intake measure, since it also may be susceptible to system effects - after all, the pupils have been in secondary education for one year. Also, it raises some interesting questions as to why it should be such a good pointer to later success. I have speculated elsewhere (Wilson, op.cit.) that instead of pupils arriving in secondary education with expectancy labels around their necks (as 11+ passes or failures) teachers may have their expectations shaped and the pupils their futures set more firmly as a result of mutual encounters in the first year of secondary education.

I have already made some reference to the limitations of an index of examination performance at 16. It was heavily biased towards GCE even when it attempted to take account of grade overlap with CSE and RSA results. It therefore favoured those sectors, the grammar and senior high schools, where the curriculum was GCE based. Furthermore, it pre-supposes that education 11-16 is all about passing examinations and nothing else. As Gray (1981) points out, it fails to acknowledge "that a curriculum composed of examinations has little or no relevance to substantial minorities of pupils in large numbers of schools". In the study some 27 per cent of 15-year-olds in the secondary intermediate school sample were not taking a public examination. In the further education sector some 58 per cent of 15-year-olds were on vocational courses. A single examination-based criterion which is biased towards academic work cannot take account of such courses.

For these reasons it may be of interest to record that while a further study is planned which will take account of the progress up to age 18 of those of the cohort who chose to remain in full-time education after 16, a major, and separate, NICER investigation is currently engaged in looking at the range of educational opportunities available to young people at the 15-18 stage in schools and further education. The latter investigation will consider in greater detail the differentiation of educational provision which is a feature of the school and further education systems from age 15 onwards.

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THE EVOLVING ROLE OF THE 'TECH' IN NORTHERN IRELAND EDUCATION

J.R. McCartney and Jean Whyte

PART I

The Northern Ireland Council for Educational Research is currently undertaking research into "Educational Opportunities for 15 to 19 Year Olds in Northern Ireland". This paper will deal with the aims, methodology and issues in this research.

Firstly, however, we must consider the context within which technical or, as they are now officially titled, further education colleges operate. Three major effects on the present state of further education colleges are:

(i) The colleges' relationship with schools;
(ii) The colleges' relationship with industry;
(iii) The colleges' response to increasing unemployment.

The first two factors, although rooted in the past, continue to influence the direction of the colleges. The third arises from more recent circumstances. All three have given rise to issues which are of current concern and have been incorporated in our research investigation.

1. The Relationship between Schools and Further Education Colleges.

The 1947 Education Act for Northern Ireland, which established a universal secondary school system, effectively left vocational education in the hands of technical colleges. This segregation, which did not of course originate with the 1947 Act, continued to emphasise the relatively low status of vocational as against academic education and helped to ensure that neither the grammar nor the new secondary intermediate schools devised a curriculum which integrated academic with vocational training.

The school leaving age in Northern Ireland was raised from 15 to 16 from 1st September 1972. However, the Education (Amendment) Act (NI), 1968, which accomplished this, also empowered local education committees to continue providing the option for 15 year-olds to transfer into a technical college for their final year of compulsory education. The decision on whether to remain at school or transfer to a full-time course in a college at age 15 was to rest entirely with parents and the pupil.

The 15-year-old entry into full-time education and the consequent feeling of competition which it engendered has brought into sharper relief some of the different attitudes of schools themselves. The exodus (around 2,000 per annum from an annual age group of between 25,000 and 30,000) has been almost entirely from secondary intermediate schools. Some of the consequences are:

(i) Some schools are accused by technical colleges of encouraging troublesome pupils to move to the colleges.

Certainly some schools admit that it has been a useful means of ridding themselves of these pupils. However, such a pupil, provided he is aware of his freedom to opt for a technical college at 15, is unlikely to choose to remain at school. Thus schools can hardly be accused of initiating this "dumping" process.

(ii) The effect on schools of losing pupils is to reduce staff and this causes some restrictions on the curriculum which schools can offer. Furthermore, an exodus of pupils at the end of fourth form in a small secondary school might leave insufficient pupils to permit separate classes preparing for GCE 'O' level and CSE in 5th form.

(iii) Technical college staffing numbers would also be altered by a renewal of the 15+ entry. In particular, principals claim[1] that the 15+ students have enabled them to employ a wider range of staff capable of specialist teaching to their 16+ and day release students, although involved also in the general education offered to 15-year-olds.

(iv) There has been a general lack of co-ordination and co-operation between schools and colleges about the courses which are provided. Competition for 15 year-olds has undoubtedly influenced the lack of co-ordinated provision for 16-year olds. However, even at 16 there is

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evidence that grammar schools in particular prefer to retain pupils who are following a programme of less than three 'A' levels rather than encouraging them to adopt the broader more vocationally oriented courses in the technical college, even though some of the latter are recognised by some university departments and polytechnics for entrance.

2. The Relationaship Between Industry and Further Education Colleges.

Industry and the colleges come into most direct contact through employees' attendance at day-release and block release courses. (The latter are courses lasting not more than 18 weeks per year). In January 1981 the numbers on such courses are included in Table 1.

TABLE 1

Participation in Further Education by Gender

Total number of vocational students in FE	Female	Male
Full-time	7,614	5,151
Day and black release	1,588	10,693
Other part-time vocational	10,387	6,752
Total	19,589	22,596

(Source: DENI, 1981)

Females exceed males except on day and block release courses, where the ratio is seven to one. Among the 15 to 20-year-old age group the ratio is even more in favour of males, twelve to one. (9,737 to 827). What is the explanation for this? That most widely offered to the author of the Birley report on Opportunities at Sixteen, was "that the kind of job girls go into requires no training"[2] (para 523). Perhaps closer to the mark are Stoney and Reid in their comment on "the small numbers of women employed in the sorts of jobs for which block and day-release training arrangements would be available".[3] Certainly the figures for day-release in Northern Ireland colleges would suggest that the male predominance in craft and engineering industries is almost total. (See Table 2).

TABLE 2

Occupational Participation by Age and Sex

January 1981		Age 16	17	18	19	20	Total 16-20
Construction Workers	F	0	0	0	0	0	0
	M	154	217	140	48	18	577
Electrical and Electronic workers	F	0	3	2	0	0	5
	M	174	393	451	244	152	1414
Other engineering	F	1	5	3	1	0	10
	M	577	1112	1021	704	344	3758
Woodworkers	F	0	0	2	0	0	2
	M	192	370	291	121	49	1023
Scientific	F	1	8	20	24	23	76
	M	19	49	109	157	132	466

(Source: DENI, 1981)

Females predominate in only two sectors, shown in Table 3.

TABLE 3

January 1981		Age					Total
		16	17	18	19	20	16-20
Clerical Workers	F	8	57	109	49	56	279
	M	1	24	51	56	32	164
Sport and Recreation workers	F	31	45	47	22	17	162
	M	6	29	22	12	7	76

(Source: DENI, 1981)

Stoney and Reid[3] carried out a questionnaire survey of polytechnic and further education college departments in Britain about the participation of women in science, technology and craft courses. A common response referred to industrialists' unwillingness "to invest in women technologists" summed up in the comment "Many companies, although not opposed to female apprentices would hesitate to select them in preference to boys, simply because of lack of facilities and the doubts of continued working - why take chances when demand exceeds supply?"

Several heads of department in the Stoney and Reid survey[3] offered the view that "very few women students are prepared to take up training of a minimum of three years and often five years before being qualified." Stoney and Reid's data on courses confirmed that the overall percentage of women on one or two year courses of all types (full-time, part-time, vocational, release) was higher than on longer courses, so that course length could be a factor diminishing women's participation.

The Equal Opportunities Commission's Report of a Formal Investigation into Further Education in Northern Ireland[4] unearthed two influences upon the numbers of women in day-release courses in Northern Ireland. Firstly, some employers with "small numbers of office staff did not regard it as practical to grant day-release to their staff. Secondly, there was no tradition of granting day-release among many larger private employers of office staff, although some did provide in-service training".

Although industrialists have a concern about the type of education being offered by schools and colleges, their aims need not coincide with those of the education world. However, the further education colleges' vocational emphases often seem to provide a meaningful model for what industrialists are asking the educationalists to supply. For example, J.A.W. Deboo in his response to the Macfarlane report says:

> Regretfully it is true that many young people have to become unemployed before they receive that first training in the vocational and life skills which are so vital in to-day's highly competitive job market. Such problems would not arise if appropriate pre-vocational education, coupled with an adequate means of assessing personal, practical and intellectual achievements, were recognised as an essential part of compulsory education for all young people, including both the least and the most academically gifted.[5]

This theme is also taken up by the Further Education Curriculum Review and Development Unit:

> For all young people the transition from school or college to work or unemployment can be a traumatic experience. Traditionally the more academic pupil tends to "buy time" by staying on in education. The apprentice, though perhaps less academic, tends to enter his world of work via protective agreements, invariably supported by release to college. The low achiever, who is probably the least able to come to terms with the outside world, is the least supported in this transition. When jobs are plentiful there is some evidence to indicate that they "survive" this transition by frequently changing jobs in the initial stages. Increasing unemployment now precludes this strategy. It follows that for all young people some form of vocational preparation is a necessity. 6

These two references emphasise again the effects of segregation of vocational and academic education and direct attention to the important role which vocational education has played in training the unemployed. The further education colleges have made a large contribution to this.

3. Further Education's Part in Facing Increasing Unemployment.

In 1977 the UK government introduced the Youth Opportunities Programme, (YOP), offering various forms of training to unemployed young people under the age of 19. In Northern Ireland the programme has ten different possible ways of training, one of which is "Youthways" courses in further education colleges aimed at the least qualified young people. In March 1982 the Programme offered 12,000 places to unemployed young people, 1,800 of these places being in further education. The "Youthways" courses are of about 14 weeks' duration and, although they vary in content, generally contain an element of social skills. In addition, within YOP, some colleges have Work Preparation courses aimed at particular sectors of employment.

The Youth Opportunities Programme will be superseded from September 1982 by the Youth Training Programme, which, when it is in full operation, will offer a guaranteed year of vocational preparation to all 16-year-old unemployed school leavers, the training to begin during the six months after leaving school. The Further Education Colleges will be involved in four aspects of this Programme:

(i) Broadly based work preparation courses, incorporating the present Youthways courses;

(ii) Short full-time work preparation courses (e.g. of one term's length) specific to particular industries;

(iii) Vocational courses with work experience inbuilt;

(iv) Day or block release courses for young people on the Programme who are receiving an introduction to a number of occupations in a Government Training Centre. The colleges are being asked specifically to contribute to training in social and life skills for these young people.

The number of Youth Training Programme (YTP) places in further education colleges (3,500 by September 1983) will be a substantial increase on their part in the Youth Opportunities programme. This has been one consideration in the Department of Education's recent decision to end the possibility of 15-year-olds entering full-time further education. The last such entry is planned to be in September 1982.

A feature proposed in recording the assessment of young people on the YTP will be the creation of a "profile" covering the further education work, industrial training, work experience, personal qualities and aptitudes revealed. This is little used at present for vocational courses, but it has been strongly advocated by the Further Education Curriculum Review and Development Unit:

> The type of vocational preparation we are suggesting ... is a complex programme of personal maturation and vocational orientation, involving the mastery of basic skills, the development of values and the exposure to essential experiences. It is quite impossible to test formally all these learning experiences and, together with the young person, the adult responsible for monitoring progress at any point should record, where possible, mutually agreed assessments of aspects of that progress and achievement.[6]

The Youth Training Programme can be the first step in providing some vocational preparation for all young people, as the Further Education Curriculum Review and Development Unit advocate. But a danger is that it can become "identified with the less able unemployed youngsters. If this happens vocational preparation will become a stigma rather than an opportunity". (FEU Newsletter, February 1982).

The current NICER research into Educational Opportunities for 15-19 Year-Olds in Northern Ireland is thus taking place in a situation of rapid change. This very situation has witnessed many claims, doubtless based on experience, but which only well-conducted research could place in a wider context. For example, the document Towards a New Policy for 15-18 Year-Olds in Full-Time Education, (DENI February, 1982), lists among the claimed advantages in retaining 15 year-olds in schools:

> Pupils who transfer at present at 15+ are often those who can least afford to lose the continuity of care and teaching and the kind of individual attention which the school can be expected to provide.

This immediately begs the question of whether schools are providing such care and whether technical colleges are not, clearly a researchable issue.

In the present circumstances our research might seem to run the risk of being overtaken by events. However, its three main areas of investigation are on the curriculum, guidance and counselling. These are the three areas which, as the DENI document specifies, will need careful attention when the proposed changes take place. The appropriateness of our research emphasis is due to preliminary consultation with teachers in schools and colleges about what seemed to them the important issues.

PART II

The Evolving Role of the Tech in Northern Ireland.

This part of the paper is concerned with the project which is currently in progress, entitled Educational Opportunities for 15-19 Year-Olds in Northern Ireland. It was set up to investigate further some issues arising from a previous research project in NICER, Progress at 16+, reinforced by discussions with relevant bodies and individuals, and by a preliminary inquiry into educational provision for this age group. In the course of the preliminary inquiry last year, consultations were carried out with staff and students of four technical colleges, one from each of four Board Areas, and with staff and pupils of some of the schools in the area around each college. Staff were asked their views on the issues mentioned, and on any other important questions which they wished to raise. Students were asked about choices of courses, and factual information on various topics was also obtained. The results indicated that the issues were seen to be important and worthy of further investigation.

What were the issues? These will now be outlined, together with the findings from the preliminary inquiry and the design of the present study.

Design

The research is being conducted in nine of the 26 technical colleges in Northern Ireland. The 26 colleges may be divided into four groups according to their size. Two colleges were picked at random from each of these groups. An extra one was selected in Belfast to give a more representative range of courses and students there, since the colleges are more specialised. In addition, schools were selected by stratified random sampling to include maintained and controlled, secondary and grammar, in each college's area. The proportion of secondary to grammar schools is of the order of 2:1, as it is in the province as a whole. More than 50 schools will be taking part in the project. With the permission of the appropriate Area Board, where necessary, schools were first contacted by letter explaining in general terms what the project was about and asking if they would be willing to participate. Whether or not they replied (unless they had replied in the negative) this letter was usually followed by a brief explanatory visit by one of the researchers to explain what would be involved - in most cases to reassure those concerned that it would not be very demanding in terms of time or resources. An appointment was then made when members of staff could be interviewed and information on the issues gathered. During this information-gathering visit arrangements were made in some of the schools and in all the colleges to carry out some testing with selected groups of students or pupils using a group test of general ability and questionnaire about choices of subjects for study and career aspirations. Depending on the numbers involved this could be done sometimes in one session, which took 90 minutes, or more. It also depended on the facilities available in the school or college for seating numbers of 30 or more in appropriate conditions. The number of visits per school or college has therefore varied from as few as two - where only an initial visit and an information-gathering visit were required, to as many as 8 where the number of students to be tested was large and their availability limited. We have been impressed by the efficiency with which we have been facilitated in our requests, which must sometimes have seemed a little exhorbitant, and we are most grateful to the principals and members of staff who have helped us in our endeavours. The first major issue of the inquiry is concerned with variation in educational provision.

Variation in Provision.

The preliminary inquiry had indicated a wide disparity in the provision on the basis of the number of subjects offered to pupils and students at CSE, O and A levels in both schools and colleges. There were striking differences for example between schools in two of the areas, which we are calling A and C. Secondary schools in area A offered a total of 12 subjects at O level and CSE on average; those in area C on the other hand offered 17 subjects at CSE and 16 at O level. There was less of a difference between the grammar schools in these areas, but technical colleges differed in the number of subjects they offered at GCE O and A level. In area A the college offered 13 subjects at O and 5 at A level; in area C the college offered 25 at O and 16 at A level.

The questions which arose are these:

(i) Within an area, what curriculum is available to 15-19 year-olds in schools and colleges, taking account of subjects offered for examinations and also for pupils not doing external examinations?

(ii) Are there restrictions by factors like type of school and sex of pupil on the width of the curriculum offered?

(iii) What is the extent of variation between areas? In what directions are different areas moving in providing for 15-19 year-olds?

We hope to answer them by seeking the following kinds of information in these ways:

A. Schools. A curriculum information sheet is completed for each school during one of the visits. This lists the subjects offered for CSE, O, A level, for other examinations and for none. Entries are made to indicate the amount of time spent on each subject at different levels, and additional subjects not on the original list, may also be entered.

A list of resources - science and language labs, art and craft rooms, library etc., and of specialist teachers, is obtained for each school. The questionnaire administered to the principal, or the teacher in charge of the curriculum and timetabling includes questions on:

- the stages at which pupils may take up new subjects, and the stage at which choices must be made
- whether certain subjects are compulsory and how the remaining subjects are chosen; what kinds of constraints or restrictions might operate here
- whether certain subjects are available to boys only or to girls only and whether, in spite of all the school might be doing, certain subjects were taken exclusively by girls or by boys

- if the school organises any courses in conjunction with the local technical college, and whether they had ever tried to do so. This led on from another question on subjects they might have liked to include in the curriculum but could not.
- a series of questions about provision for pupils who were not thought capable of taking external examinations; information is being sought on the staffing for these pupils, the curriculum and the general arrangements for them
- a series of questions on provision for post 5th form pupils, especially those who were not proceeding to A level. These included the question of whether schools were contemplating any changes in their approach now that all 15-year-olds would be staying with them instead of finishing their years of compulsory schooling in the tech.

B. Technical Colleges: Heads of departments are asked to complete forms giving details of courses taught, subjects included, the time per week allocated to subjects, the numbers of male and female students,and, if there is more than one group in any course, how groups are formed. In addition they are asked to state the requirements for entry to the course.

The principal is asked in his or her questionnaire, about provision for choice, about how students select their courses, and how they are grouped; whether there is any provision for change in the course of the year;

whether there is provision for pupils of lower ability; and their opinion on why students select a college at 15 or 16 as well as their opinion on the direction in which they see their college moving. Since provision should not be seen strictly in terms of actual subjects being offered, for these do not constitute the whole of education, we are also looking at the extent of provision of career guidance in the schools and colleges in our survey. Questionnaires are administered to careers teachers and lecturers about the organisation and extent of their work in careers, their own background for this work, the resources they have at their disposal, and about how they would like to see this area develop (if at all). A further important area is that of counselling, where development of the whole person is concerned and his or her preparation for the responsibilities and decisions of later years. We are also looking, therefore, at the counselling facilities available in the schools and colleges and talking to the people concerned.

So much for variation of provision. The second issue is that of movement from schools to technical colleges.

Movement into Technical Colleges from Schools

DENI statistics showed that over 2,000 pupils transferred to technical colleges at age 15 annually. Boys have been in the majority in recent years, and the majority have come from secondary schools. At age 16 again, about 2,000 transfer, but, now about 1/3 come from grammar schools and girls outnumber boys by 2:1. But it emerged that there were wide divergencies especially between secondary schools in the proportion of 15 and 16 year-olds entering further education. There was some variation also among grammar schools. The questions that arose were:

(i) Are there identifiable characteristics of schools which supply students to colleges at different rates at age 15? (this will in fact be ending now anyway)

(ii) What are the educational and social backgrounds of pupils entering particular further education courses?

(iii) If pupils entering further education are making an ill-informed choice of course, what could be done in schools to improve this?

(iv) Are there differences in performance, attitudes and destination at 16 of those who take only GCE or CSE courses, compared with those who take City and Guilds Foundations Courses, or those who enter technical college at age 15?

(v) What kind of communication exists between schools and colleges and how does it affect the organisation of link or shared courses and the transfer of pupils?

Information is sought in answer to these questions in several ways:

(i) Factual information gathered about the schools including numbers of pupils transferring during the last three years, and opinions of principals and careers teachers were sought on this issue.

(ii) This information is sought by means of a questionnaire administered to a sample of students in each technical college which covers possible influences on their decisions, their aspirations, the courses they have already taken or hope to take; their likes and dislikes about the college and so on.

(iii) The questionnaire schedule for principals and careers teachers in schools attempts to determine what kind of information is relayed to pupils about the courses, by whom it is given, how it is given and when; we also try to establish if there are any formal links with the tech, or channels of communication.

(iv) This too is answered by the questionnaire given to students. A similar questionnaire is given to pupils in the 5th form of schools who have shared courses with technical colleges.

(v) This is answered already by (iii) above.

The third major issue is that of the progress of pupils and students.

Progress of Pupils and Students.

It was not possible to follow students' progress over time in the preliminary study. However, it is proposed to determine the performance of selected students on basic skills, to find out about their social and educational background, their attitudes at the beginning and end of the year, their academic progress and relate this to the other information gathered about the schools and colleges, in particular the guidance and counselling facilities and the resources. Students' adjustment to the course, the degree to which the college has been able to meet their requirements and their use of the services provided would be pertinent to this part of the study.

Work on the project began in January this year, the preliminary work having been completed last year. I am happy to be able to report that notwithstanding the weather, strikes, and other miseries which wreak havoc with researchers' schedules, the data gathering is proceeding apace and the reports should be ready within the envisaged time span. They should make interesting reading, and a worthwhile contribution to the current debate on the education of 15-19 year-olds.

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MAKING THE ORDINARY SPECIAL! A REFLECTION ON THE SIGNIFICANCE OF SPECIAL EDUCATION FOR EDUCATION IN GENERAL

Professor Desmond Swan

> Injustice arises as much from treating
> unequals equally as from treating equals
> unequally - Aristotle.

The International Year of the Disabled (1981) seems to have given both the concept and the reality of Special Education a boost from which, it is hoped neither it nor education in general will ever recover! Thus ironically, one outcome of this shot-in-the-arm may well be to hasten the very diminution of Special Education as a distinct element on the educational horizon. It would seem appropriate then for us to use this vantage point to take stock of the Special Education movement, to ask what has been its impact on formal education in general, and to place in perspective the interaction between ordinary and Special Education - in so far as the latter is still identifiable as a separate entity at all. The separation is, of course, arbitrary and is not to be exaggerated. But, since certain influences have resulted from institutionalized Special Education which seem likely to enrich the rest, while a certain impoverishment may also result from too great a separation of it, this exercise in counterpoint would seem important as well as timely.

This paper is structured as follows: perspectives from the ordinary school; perspectives from the Special

Education setting; barriers between them; currents of influence from the one to the other. It is the chief hypothesis of this paper that Special Education is now contributing to shifting to a significant degree the balance between the individual pupil on the one hand and the cultural and social determinants of learning as manifested in schooling, on the other.

Schools necessarily reward achievers, and in so doing they can scarcely avoid penalizing those who fail to achieve. Thus far they are elitist, norm-centred. Yet they aspire or purport to educate all children. To this extent they are egalitarian or child-centred. How to reconcile these two aims is the perennial problem of the educator, at whatever level of formal schooling.

Traditional education is based on the group as well as the culture, and the universal demands these make on each individual. A certain irreducible core of knowledge, skills and attitudes needs to be mastered therefore and shared by each one, as the price exacted for future sharing of culture. In view of this, teachers can scarcely be faulted for rewarding achievement, since, it would seem this is precisely what society - which defines their role to a large extent - demands that they do; and, if school is to prepare for life, then teachers will argue reasonably, competition in school is a valid and necessary precursor of competition in life after school. (It may also be seen as providing an important inducement to the pupil to make his best effort to learn here and now). Here then the emphasis is on the collective, on the mass, and on the external determinants of education. This traditional schooling, at any rate above the elementary level, has been competitive, relatively rigid and success-oriented in its outlook.

No doubt traditional schooling has had its strengths e.g. by way of insistence on objective standards of excellence, and on the need for each individual to give of his best - though it is clear that it has not always gone the best way about achieving these desirable aims. Again, it is a fact that the individual's potential cannot be developed in total isolation from the skills of the culture, or realised in totally idiosyncratic ways. (For instance, can the concept of art be entirely divorced from that of communication, or conversely can artistic education be separated totally from the development of personal potentialities?)

However, what is here being called non-special or ordinary education, can be seen to have its shortcomings, varying, of course, in expression and intensity from school to school.

First there is the danger of devaluing some individuals in practice, despite some homage to uniqueness, in theory. This devaluing could result from the teacher allowing the pupil's failure to achieve, to overshadow or even define his worth as a person. Second, there is the risk of the teacher neglecting to distinguish between culpable failure and failure due to circumstances. As a result, the one whose individual learning patterns, for whatever reason, were out of phase with the majority, may sometimes be 'depersonalized'. 'Let him measure up or get out', would be the position adopted by authority in the past. Stupidity and laziness were both assumed to be branches from the same tree, whereas achievement was seen as the reward for diligence.

Clearly then the teacher, as a dispenser of values, must walk a very fine line between encouraging competitiveness between pupils on the one hand and cherishing all pupils equally on the other. It is, however, all too easy to lose sight of the latter principle when, for instance, the teacher's own status or his accountability is based largely on his pupils' examination successes.

Special Education can be simply defined as a delivery of educational service for pupils with special educational needs. These are services which are not normally available in the ordinary school but may now be found both in special schools and in some ordinary schools. Special Education is a phenomenon of rather recent origin; an outcome of the child-centred movement in Education, of Humanism, the Enlightenment and the Romanticism of earlier centuries. More recently, Special Education results from the impact of scientific and technological modes of thought being applied to education in this century, as well as from the ideology of equalizing educational opportunity in our own day.

In referring to Special Education as a separate phenomenon however, I do not wish to suggest for a moment that Special Education itself is uniform either in its organisation or its achievements, or that it is not changing rapidly. I do want to identify it as a sort of emergent "sub-culture" within the totality of education, and one that has moved in a remarkably short space of time from somewhat obscure corners into the broad light of day. In the early stages of its growth, and even still in some countries, Special Education has been seen more as a regrettable necessity, isolated from the rest of education, catering for the halt, the blind and the maimed, while being supported in its separateness by the twin pillars of public guilt and private charity. It was, besides, a sort of no-man's-land at the point of convergence between the educational, social and medical professions, and again between the spheres of influence of two or even three government departments. And it sometimes seems to those most concerned, that while the members of these professions may not talk the same language as each other, the members of the government departments simply do not seem to talk to anyone. (I refer here for instance to the fact that, in the Republic of Ireland, despite demands in a half dozen publicly commissioned reports, the White Paper on Educational Development, 1980, failed even to mention the need for, and the total absence of a psychological service from our primary schools).

We make a fairly wide distinction between the primary and the post-primary sectors of our school system. While Special Education only developed in the primary sector in the past three decades or so, it is almost totally neglected in our post-primary schools still, subsisting perhaps on the polite fiction that no seriously disabled or handicapped pupils exist in these schools - outside three designated schools in the whole country. There is, however, evidence that some handicapped young persons, who could benefit from it, are not in fact receiving second-level education at all, (Maloney, 1981). In fact, for many, Special Education would not have been seen as real education at all. But then it was also possible for school authorities who chose to do so, to ignore these problems - at least until the school leaving age was raised to fifteen years, in 1972. No doubt small budgets were shaped by faint hearts and by small minds for a long time, as the following words, quoted from a Department of Education official in 1938, will suggest: "After all, this is a world for the average man, and if there are funds available, the bright child who will be an ornament of the State and a useful citizen should be helped. I think it is a waste of time trying to teach children who can never learn and never be taught to learn" (quoted by Byrne, 1979). It is sobering to reflect that this could be an officially accepted position following closely on the adoption of a Constitution that guaranteed to cherish all the children of the nation equally; and that it could be so, a full generation after Maria Montessori had established the notion that "mental deficiency presented chiefly a pedagogical rather than a medical question". (Cited in Curtis and Boultwood, 1970, p.496).

It must also be pointed out, however, that the emergence of Special Education was seriously hampered by the widespread lack of facilities for training key personnel, mainly teachers, who would service it. Apart from a course for teachers of the deaf, the only other full-time training course in Special Education in the Republic, was 21 years in existence last year. For the rest, part-time or small scale in-service courses have, all too frequently, had to bear unduly heavy burdens, and could do little to enhance the status of Special Education within the teaching community or outside it.

It is good to be able to report therefore that, especially in the past decade, Special Education has at last been clearly coming into its own, not only to claim its rightful place as a specifically educational function, but even to lead the field in ways which longer established agencies may follow. I refer not only to its dynamic growth and its achievements, in both research and padagogy, but to the impact is is beginning to exert on "mainstream" education in many ways.

Special Education's quickening course from a trickle (which it remains in some developing countries to-day) into a flood, which would now describe it in others, has been traced in 120 countries as proceeding through a series of fairly consistent stages (Putnam, 1979). Generally the first stage has been to provide special education for the deaf and the blind, now found in 80 per cent of the countries studied and progressing on to reach eventually provision for the gifted and the 'learning-disabled' in less than 1 per cent of those countries surveyed. Indeed, it now frequently seems that the large number of weak pupils who are neither strong enough to keep up with the average, nor slow enough to be labelled handicapped, retarded or E.S.N., have the worst of both worlds and would be better off to feign serious failure - precisely in order to have Special education provision of some kind.

Two high points in the worldwide development of Special Education were, of course, the passing of Public Law PL 94-142 in the United States, in 1975, and the similar advances in thinking embodied in the Warnock Report in the United Kingdom (D.E.S., 1978). Their combined significance along with similar moves in other countries was to legislate generally for appropriate Special Education at public expense, for each handicapped child, in the least restrictive environment, with removal from the regular school only when the nature or severity of the handicap demands it. A time-scale for achieving this goal in the United States was also drawn up, and while its implementation may still be uneven, and there are some disasters, nevertheless it indicates the direction in which provision for Special Education is going. (Figure 1).

Besides a vast increase in the number of university programmes offered in Special Education, in the past decade, there had already occurred a thirty-fold increase in research expenditure on Special Education between 1960 and 1970 (UNESCO, 1973). As to the question of the

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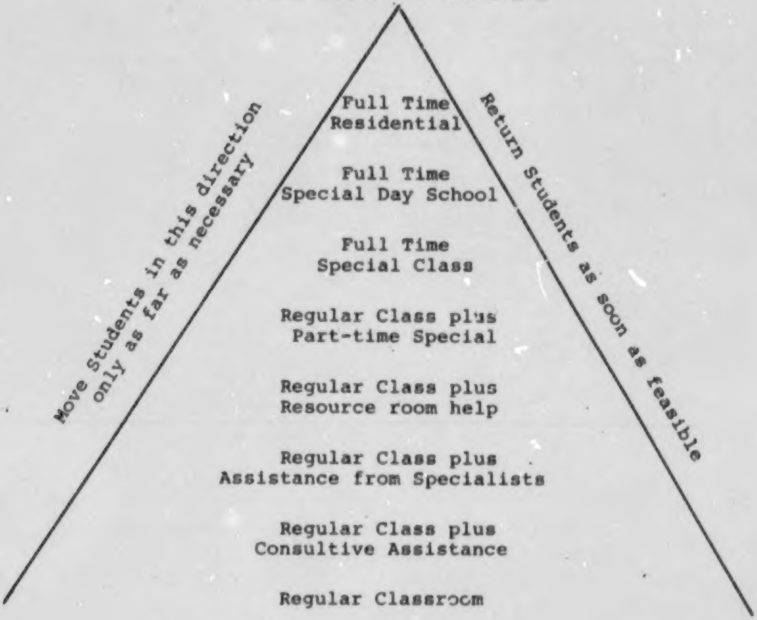
effectiveness of Special Education, I would draw attention to some early indications of its cost benefit effectiveness (Conley, 1972) as well as two local studies of former special pupils carried out in Dublin by Carroll (n.d.) and in Cork by O'Callaghan and Toomey, (1980).

FIGURE 1

CASCADE MODEL


Full Time
Residential
Full Time
Special Day School
Full Time
Special Class
Regular Class plus
Part-time Special
Regular Class plus
Resource room help
Regular Class plus
Assistance from Specialists
Regular Class plus
Consultive Assistance
Regular Classroom
Move Students in this direction
only as far as necessary
Return Students as soon as feasible

After: E. Deno : Exceptional Children, 1970, 37, pp. 229-237.

Carroll found that among the past pupils of one Special School in Dublin unemployment was actually lower than the national average. The Cork study concluded that "Special Education has been effective in developing academic skills to a level of independence for the majority which is functional in adult life". Of course this is limited evidence which can only suggest that Special Education is showing some successes which would seem less likely to have occurred in its absence; nevertheless, not only within its own frame of reference but by external criteria too, it does have some indication of its effectiveness, with children who in all likelihood would have been treated as ineducable a decade or two ago. In fact, what has occurred is not merely a vast increase in expenditure of money and of effort, but a revolution in attitudes and values, both towards Special Education, and resulting from it.

Now it would be easy to exaggerate the achievements and overlook the shortcomings or failures of Special Education. It has indeed made mistakes, while some of its apparent successes may be attributable to other aspects of the overall revolution of which it is itself merely one part. Nevertheless, first by fostering the idea that there are groups of children with special educational needs it has faced the school system as a whole with a challenge which the latter had, in the past, largely ignored. In part of course, it has done this by showing how large numbers of these children may indeed be enabled to learn. Here the emphasis is not on the group, but on the individual, on accommodating the system, the curriculum, the technology, to the varying or idiosyncratic patterns and styles of learning found. This is true, theoretically at least, whether the provision be in a special school or in a special class, or by way of individualized instruction in the ordinary classroom - though the focus here may still be on deficits rather than on capabilities. And it must be admitted that, whatever about primary school, the academically oriented post-primary school which centres itself on subjects finds it extremely difficult to accommodate itself to pupil difference across a range that includes the very weak. Besides, at the level of the individual, this 'institutionalization of failure' is a 'two-edged' sword. In accepting actual limitations on learning beyond the ordinary in some areas it becomes more difficult to convey a notion of external standards of excellence in other areas, which the handicapped individual may well be capable of achieving. Indeed, the unique contribution to excellence of many of those who suffer from some kind of serious learning difficulty (Christy Brown or Christopher Nolan) would be stifled by an overgeneralization of the maxim that "to know all is to forgive all."

Again, the labelling process frequently entailed in the administrative purpose of releasing funds necessary to support Special Education too often demands that a corresponding price be exacted in the misguided attitudes of classmates, of workmakes, or of potential employers. For instance, in the study carried out by Carroll, the reported attitudes to young persons who had left Special Schools, did include some stigmatization (see Carroll, op.cit.,) although there was evidence that this was diminishing in time. Therefore, what had begun as a charitable movement evolved in such a way as to imply diminished personal responsibility, or to suggest, unwittingly no doubt, that there are two groups in society, the handicapped and the normal. Perhaps it has been necessary to institutionalize Special Education first, in order to deinstitutionalize it eventually, but deinstitutionalizing it alone without at the same time educating public attitudes to an informed accommodation of handicapped persons, will be counterproductive.

To sum up, I submit that as integration progresses it is not only revolutionizing the attitudes of the non-handicapped, children and adults alike, to those who are disabled in some way; it is also extending the brief of education in general, and of the ordinary school therefore, far wider than it had been in the past. This acceptance of diversity is beginning to show itself in the application of research findings from the special to the ordinary school context and in changed curricular provision and teaching strategies. For instance, research on language acquisition and on learning reading and number among the handicapped, is having a clearer impact on ordinary teaching in these areas. Special Education is showing now that it is possible to combine an environment that is emotionally supportive towards the individual with special learning difficulties with one that is intellectually stimulating as well. The lesson that failure to learn reflects failure to teach, and that failure to teach resulted in pupils learning to fail, is slowly permeating to schools as a whole.

Undoubtedly there are barriers to communication between special and ordinary education - attitudinal, geographical and professional barriers which operate in both directions. These inhibit understanding and education on both sides. The unique contribution of the Special Education of the weakest is to inform and enrich the education of all by overcoming and eventually obliterating these barriers. In turn, regular education is gradually becoming (more) specialized, no longer in terms of subjects but also in terms of pupil differences.

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DEFICIENT MEMORY PERFORMANCE IN THE MENTALLY HANDICAPPED: A CONSIDERATION OF STRUCTURAL DEFICIENCES AND CONTROL PROCESSES

John Marshall

This review paper will consider some of the recent theoretical and empirical developments concerning memory processes in the mentally handicapped. These will be dealt with under the following headings:

the population under consideration;
structural and control deficiences;
the control processes of rehearsal, organisation and elaboration;
metamemory and executive control.

Population

The mentally handicapped are a heterogeneous group of individuals who, according to Belmont (1978) "...have a huge range of physical, intellectual and social qualities that fail to conform to societal expectation..." (p.155). This diversity has not, to date, been reflected in memory studies with the mentally handicapped. For example, only one broad etiological group has generally been chosen for investigation, namely those people who are "... at the lower end of the normal distribution, persons in whom an unlucky set of circumstances and probably an unlucky selection of genes produce slow development, but in whom there are no major discernable biological defects." (Robinson & Robinson, 1976, p.288). Individuals in the other broad group have received relatively little attention, namely those whose "... intellectual development has been interfered with by some pathologic condition such as disease, injury, chromosomal abnormality or a discrete genetic disorder." (Robinson & Robinson, 1976, p.34.). The result is that the overwhelming majority of memory studies have restricted themselves to the mildly mentally handicapped, IQ roughly 50 - 75, of cultural-familial or undiagnosed origin, and have avoided using individuals with specific organic, sensory or motor impairments. (Stanovich, 1978). It should be noted that until the mix of research subjects reflects the full range of the mentally handicapped and the diversity of the population incorporated into theories of memory in the mentally handicapped, our understanding of processes and programmes of amelioration will be incomplete. (Kail, 1979).

Structural and Control Deficiencies

Most explanations of the deficient memory performance of the mentally handicapped have made use of a distinction between structural and control deficiencies. Structural defects refer to fundamental, biological impairments in the memory system while control defects refer to an inefficient or inappropriate utilisation in memory tasks of subject-initiated strategies (such as rehearsal, organisational and elaborative processes). Robinson & Robinson, (1976) have likened the distinction to that between the hardware and the software in computer systems. Hardware refers to "...the basic, built-in capabilities of the computer system; software refers to the manner and content of the programming." (p.288).

Structural features are felt to be unchangeable aspects of the central nervous system. Damage or impairment of these underlying neural mechanisms cannot be directly corrected, although it might be possible to compensate for such deficiences. Control processes, however, being optional or voluntary, are assumed to be amenable to change through training. This critical difference between structural and control deficiencies has been utilised to help illuminate the nature of deficient memory performance in the mentally handicapped, "... the question of whether a retardate deficiency reflects structural or control features rests on the effectiveness of training procedures. If the deficiency responds to training, control features are implicated; if training is unsuccessful, the inference is that a structural difference is involved." (Campione & Brown, 1977, p.369).

Such distinctions, or course, are complicated by developmental approaches which allow structural changes in cognitive processes to occur over time, as part of maturation. Thus, "... while a structural feature at any point in time may be a fixed, untrainable capacity, it is still the case that these structural features may change as a function of age and experience." (Brown, 1974, p.61).

Structural deficiency theorists would assert that the mentally handicapped are afflicted with some defect or defects over and above their general developmental retardation or delay. In his stimulus trace theory, Ellis (1963) maintained (although he has since modified his position) that memory traces decay more rapidly in the mentally handicapped than in the normal (Kail, 1979). Ellis felt that "... two factors account for retarded children's failure to use information after an interval: their smaller intake of information (poor trace amplitude) and their greater loss over the short interval (poor trace duration)." (Belmont, 1978, p.169). These deficiencies he contended originated in "lowered central nervous system integrity". Butterfield (1968) in a study comparing digit span performance of groups of mildly mentally handicapped matched on either mental or chronological age, found that central nervous system integrity was related to mental age and not to IQ. Thus, he concluded that the deficiencies result from a developmental lag rather than a structural defect.

Spitz (1963) suggested another possible structural defect in memory function of the mentally handicapped: a "... sluggishness or torpidity of cortical cells. If it requires a longer time to induce changes in the electrical, chemical or physical condition of stimulated cortical cells in mentally retarded persons, they should learn and remember less than normal individuals given the same amount of stimulation and/or effort." (Robinson & Robinson, 1976, p.289). Spitz felt that these induced changes are themselves resistant to alteration by new information - hence, a lack of resilience in the neural structure.

Another possible structural defect lies in short-term storage buffer capacity. Spitz (1973) felt that the mildly mentally handicapped can only hold about four to five chunks or units of information in short-term storage for processing compared with the usual seven ± two units for typical adult memory systems. (Robinson & Robinson, 1976), p.289.

Campione & Brown (1977) state the fundamental difficulty with these early, purely structural defect explanations of poor memory performance - they do not control for the subjects' activity during the presentation and retention intervals. "... short term memory performance can be affected by structural limitations, but performance can also be determined by what the individual does with the material." (p.371).

Most studies of memory performance in the mentally handicapped during the 1970's were devoted to an examination of what the individual does with the material, i.e. control rather than structural deficiencies. This trend followed on Belmont and Butterfield's refutation of Ellis' (1963) trace decay theory. The studies have shown fairly conclusively that the mentally handicapped can be trained to utilise memory strategies to significantly enhance recall performance.

More recently, however, a re-examination of possible structural defects has been undertaken, utilising studies of speed of memory search. Harris & Fleer,(1974). in a study of high speed memory scanning using various control groups and two diagnostic categories of mentally handicapped (cultural-familial and encephalopathies), found evidence of structural deficiences in central processing. Other investigators of iconic memory processing have concluded that the "... iconic memory of the [mentally handicapped] is inferior to that of the [non-handicapped] individual matched for chronological age or mental age." (Hornstein & Mosley, 1979, p.40).

In summary, Campione & Brown, (1977) feel that structural differences probably do exist, but little can be said about them at present until further research is undertaken into (1) "whether the differences are in fact structural (i.e. not modifiable by training)... and (2) which type of structural difference is involved." (p.402).

The remainder of this paper will focus on investigations of deficiences in the utilisation of the control process strategies of rehearsal, organisation and elaboration.

Rehearsal

Rehearsal strategies are frequently used to maintain information in short-term storage. They range from simple to complex and usually involve the overt or covert naming of stimuli. One may, for example, look up a telephone number and continually repeat it as one moves towards the telephone. This is simple rehearsal, a strategy which is seen with some regularity in children at ten years of age. (Kail, 1979, p.9).

It is firmly established that mentally handicapped children are deficient in the use of rehearsal. They do not seem to spontaneously rehearse in those situations where it would be advantageous to do so. In order to examine whether this rehearsal deficiency is a structural feature of memory in the mentally handicapped or simply a failure to employ a memory strategy, training studies have been undertaken. Belmont & Butterfield (1971), by forcing the mentally handicapped to adopt a "cumulative rehearsal-fast finish strategy" when viewing lists of items, found that their performance improved dramatically. Also, preventing normal subjects from utilising the rehearsal strategy resulted in performance patterns and recall levels similar to the original patterns and levels of the mentally handicapped.

Brown et al.(1973) examined the effects of rehearsal training and rehearsal prevention in normal and mentally handicapped adolescents using a "keeping track task". They concluded that "... by both training a strategy in [mentally handicapped] and simulating the absence of that strategy in normals, we can confirm that it is the presence or absence of this mnemonic that governs performance in both groups." (p.130).

Butterfield et al.(1973) examined rehearsal training in greater detail. Their paradigm involved a six-item list of letters and the cumulative rehearsel-fast finish strategy alluded to earlier, with trained and untrained mentally handicapped and comparison groups of normal subjects. But, in addition, they distinguished between an *acquisition strategy* and a *retrieval strategy*. The optimum acquisition strategy in the experimental task involves (1) looking at the first three letters serially and rehearsing them in order to encode the information into long term storage; (2) exposing and attending to, but not rehearsing, the last three letters as quickly as possible and then exposing the probe letter immediately. The optimum retrieval strategy involved searching short-term storage for the *last* three letters to see if the probe item was one of them. If it was not, one should search the *first* three items which had been rehearsed. If one searches the other way round, then the last three items will have faded from short-term storage - i.e. be forgotten. (p.657).

Butterfield et al. (1973) felt their studies show that the usually poor performance of the mentally handicapped was not indicative of their memory capabilities. Their deficiencies, subject to improvement through training, are (1) lack of spontaneous use of rehearsal; (2) "... [they] do not properly sequence rehearsal and essential non-rehearsal learning strategies and (3) [they do not] ... intercoordinate multiple retrieval strategies nor coordinate these retrieval strategies with strategies of acquisition." (p.667).

At this point, some questions naturally arise. (1) How durable is the training? (2) Will the same rehearsal strategy be retained for an appreciable length of time and utilised on the same memory tasks, or will it disappear? (3) Will aspects of the training be adapted for use in subsequent memory tasks which may differ from the original rehearsal training tasks? Campione & Brown (1977) make a useful distinction between these transfer tasks of training. They use the term maintenance of a strategy to mean that the trained strategy is utilised again at some time beyond the initial training. The term generalisation is used to mean that the mentally handicapped utilised their acquired skills in circumstances different from the situations in which they were learned. Borkowski & Cavanaugh (1979) elaborate further. They describe two types of generalisation: near and far. Near generalisation reflects minimal changes in the "degree of difference in stimulus materials and task demands" between the training and subsequent tasks, while far generalisation represents substantial changes (Burger et al. 1980, p.373). Thus, maintenance over time and generalisation to new material are two important indices for "... evaluating the degree of success for any training programme..." (Engle et al (1980, p.451).

Kellas et al.(1973) in a study of maintenance of a rehearsal strategy with mildly mentally handicapped adolescents, trained groups of subjects to use overt cumulative rehearsal when trying to remember lists of pictures of objects (nine items per list). Results showed that, after the relatively simple training procedure, the mentally handicapped showed active utilisation of rehearsal strategies which resulted in greatly enhanced free and serial recall of items. The researchers then retested the subjects two weeks later and found maintenance of the rehearsal strategy.

Brown et al. (1974) attempted to assess longer term maintenance of a trained rehearsal strategy with mentally handicapped adolescents. Subjects who had been trained to rehearse were re-examined five to six months after their training to see if they had retained the rehearsal strategy. They found that the majority maintained the strategy, which was mirrored in both better recall performance when compared to an equivalent untrained group and also in the pattern of responses, which indicated a cumulative rehearsal strategy in operation. Other studies reported by Kramer et al. (1980) substantiate these findings.

Studies, therefore, have shown evidence of maintenance of a trained rehearsal strategy in the mentally handicapped. What about the second criterion for a successful rehearsal training programme, namely generalisation? If there are to be implications for educational practice it seems imperative that the training can be generalised to situations not identical to the training tasks.

Brown et al. (1977) state that, in the context of training the mentally handicapped, the problem of generalisation is not a new one. Both American and Soviet psychologists have suggested that one of the main difficulties in training mildly retarded children is that they tend to acquire information which is "welded" to the form in which it was acquired (Shif,1969, p.347, in Brown et al. 1977, p.192).

Recently, Kramer & Engle (1981) studied the effectiveness on recall - and on subsequent generalisation, of rehearsal training done in combination with increasing the awareness of subjects to the benefits of the strategy. They found that neither rehearsal training nor strategy awareness nor their combination significantly altered memory performance on the generalisation tasks. They did, however, produce some indirect evidence that "... while strategy training and knowledge of a strategy's benefits may result in generalisation when training and transfer tasks are similar (near generalisation) these factors will not be enough when there is a great deal of difference (structure, content, etc.) between the tasks (far generalisation)." (p.527). They suggest alternative ways of inducing generalisation in the developmentally young, involving self-checking or self-interrogation techniques (Brown, 1978).

In summary, several kinds of memory tasks in everyday life, classroom and laboratory require rehearsal strategies for efficient recall. It is well established that the developmentally young and the mentally handicapped do not tend to spontaneously utilise rehearsal strategies. This rehearsal deficit can be ameliorated by active training programmes. The differences between the performance of trained mentally handicapped and their equal mental age counterparts are often greatly reduced by an impressive amount, "... but they are almost never eliminated..." (Kail, 1979, p.119). Further, maintenance of the trained rehearsal strategy can be achieved, often for a long period on some kinds of memory tasks. The successful training and maintenance of rehearsal strategies suggest that they are primarily processes under the control of the mentally handicapped. On the other hand, rehearsal capacity limitation, lack of complete elimination of normal-handicap differences and general failure to produce a significant generalisation of rehearsal strategies to new memory situations may point to some underlying structural defects.

Organisation

Organisation is another mnemonic strategy that can be utilised to enhance memory performance. It is beyond the scope of this paper to describe and delineate the full implications of a concept like organisation on theories of the human memory system. A short definition and description must suffice and will enable us to

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interpret some of the findings with regard to memory and the mentally handicapped. Klatzky (1980) defines organisation thus: "the formation of superordinate units from collections of input items." (p.299). Organisation can be inherent within the material or it can be experimenter-imposed or subject-imposed organisation.

Organisation can facilitate recall by lessening the demands on storage places in short-term memory. To put it simply, seven information-rich chunks is the same as seven single items in short-term memory. Organisation not only helps the initial encoding, by enriching the units one is processing, it also aids in the retrieval of information. Baddeley refers to Broadbent's analogy of likening human memory to a vast library: "In order to be useful the books in a library must be categorised, organised and shelved in a systematic way, otherwise finding the appropriate book becomes so slow as to make the library unusable. There is no advantage to having the book if it cannot be located when needed." (Baddeley, 1976, p.285; Broadbent, 1966). Individuals, therefore, make use of organisational strategies by utilising organisation inherent in the material, or invent their own subjective structure if none is apparent. This helps to encode and enrich incoming information and, as well, enhance subsequent retrieval.

Clustering, or grouping, is one organisational technique which can, in the short term, act as an aid in free recall and, can, in the longer term, contribute to the formation of conceptual categorical structures. Clustering in free recall can be based either on previous item associative strength or on category membership (Lathy, 1979). In either case, the S "clusters" or "chunks" items together into one taxonomic category, the recall of which will elicit the individual items.

Typically, lists of words/items which belong to a few or many conceptual categories are compiled, and presented to subjects for free recall - "We might ask a child to remember pants, orange, car, shirt, plane, shoes, blue, boat, green. A likely result would be that a child recalls pants, shoes, orange, green, blue, boat, plane. While retention is not perfect, the child has used the categories - clothing, colors, vehicles - to organise his recall." (Kail, 1979, p.116).

Early studies have found that the mentally handicapped, when presented with organisable lists for recall, tend to have lower recall scores and display less clustering than individuals with higher IQs. In order to help answer why this may be so, Glidden & Mar (1978) studied the availability and accessibility of categoric information in the semantic memory of mentally handicapped and normal adolescents. (Availability refers to what information is actually stored; accessibility refers to what information is retrieved). In Experiment 1 the mentally handicapped group and chronological age matched normal subjects (CA 15 years) were required to retrieve information from various semantic categories, the exemplars of which were either of high or low retrieval frequency (or typicality). One conclusion they made was that, because the mentally handicapped verified significantly fewer of the least typical examples of categories, they had deficient category knowledge i.e. an overall deficiency in availability.

Glidden & Mar (1978) also found evidence of an accessibility deficit (i.e. poorer retrieval) and suggest that any remediation of this failure to utilise retrieval cues should concentrate on training in techniques emphasising the generalising of strategies to new materials and situations.

In a recent study, August (1980) examined the effects of presentation methods on the organisation and recall of strongly related and weakly related words, using mentally handicapped and an equivalent mental age group. His findings tend to support Glidden & Mar (1978). August concluded, inter alia, that the mentally handicapped had an accessibility deficit i.e. less efficient retrieval which, for efficient recall, must involve the developing and monitoring of plans for organising incoming information in anticipation of recall. (p.142). The mentally handicapped also have, he felt, an availability deficit which seems to differ from equal mental age counterparts. The differences may lie "... in the knowledge [the mentally handicapped] possess about the meanings of words to be recalled (semantic knowledge) and in their ability to relate these words to the meanings of other words." (p.142). The overall memory deficit in organisational abilities may not, then be solely attributable to control deficiences. August feels that, in addition to training the mentally handicapped to make use of organisational plans for recall, researchers must also use techniques which will strengthen the semantic memory trace by somehow connecting or linking incoming items to other items already in memory.

How successful have researchers been in attempting to train organisational strategies with the mentally handicapped? Briefly, numerous studies have shown that mentally handicapped adolescents and adults have been induced to utilise categorical information within a list to facilitate recall. For example, Burger et al. (1978) investigated active sorting strategies. Their experimental group received an intensive multi-session training procedure in which the mentally handicapped subjects were trained to arrange the items in conceptual arrays, to name individual stimuli and the superordinates

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to which they belong and to count the number of items in each superordinate category. They found that "... manipulatively and conceptually active multi-session training of [mildly mentally handicapped] ... in sorting and retrieval strategies resulted in significantly greater increments in their sorting, recall and clustering performance than those obtained by groups receiving practice without specific instruction or a control group receiving no practice at all." (p.259).

Some research findings have provided evidence for maintenance of these organisational strategies. Typically, subjects are trained to categorise items in a list, then at some later state, are given another list containing the same categories and/or items for recall. Robinsion & Robinson (1976), mention that Bilsky & Evans (1970) found evidence of maintenance. They trained mentally handicapped on lists with items blocked by category. The strategy was maintained on a subsequent random list of the same items, although performance was not as high as on the first lists. In a later follow-up study (Bilsky, Evans & Gilbert, 1972) found no evidence on maintenance when new item lists were presented. Nye et al.(1972) provided evidence of maintenance of an organisational strategy but the training was extensive. Reichart & Borkowski (1978) examined the effects of category size and instructions to cluster on 112 mentally handicapped and normal children matched on mental age. Although the category size effect was weak, they did find strong evidence of maintenance of the clustering strategy. A particularly relevant factor in maintenance, they concluded, was the encouragement of active manipulation of items during the study/training period. Further evidence for maintenance is found in a study by Engle & Nagle (1979), who used a training programme that involved the subjects in thinking of items according to any uses they might have, any personal experiences they might have had, or any other items in the list which were related in any way. They found that the "... instruction improved recall and categorical clustering both during training and on post-tests one week later..." (p.439). Burger et al. (1980) found strong evidence for maintenance of a trained organisational strategy involving sorting and retrieval after a six month interval. They concluded that maintenance can be reliably achieved if "... an appropriate training package is used that included the critical features of active participation, multitraining sessions over several training days, analysis of important task components, systematic introduction of the relevant strategies, employment of fading techniques and impressing the subjects with the value of the strategy." (p.378).

The evidence for generalisation, however, is scanty. Burger et al. (1980), in the study mentioned above, found no significant evidence of near or far generalisation. Engle et al. (1980) on the other hand, report evidence of near generalisation for mentally handicapped subjects who had learned a semantic encoding strategy. Kramer et al. (1980) report some other studies which provide evidence of near generalisation. They conclude, however, that researchers have had very little success in obtaining strategy generalisation. This has led many researchers to "... abandon attempts to train only specific strategies or control processes and instead to study the effect of more general factors such as people's knowledge of their own memory processes." (p.309).

Elaboration

Limits of space permit only a very brief reference to elaboration. Mnemonic elaboration strategies aim to relate knowledge the person already posseses with the to-be-remembered items. Only rarely do normal adults rely solely on rote processes to remember. "...Language habits, syntactical structures and cognitive strategies [such as imagery] can singly, or in combination enhance ... learning." (Borkowski & Wanschura, 1974, p.1 & 2). Borowski & Wanschura (1974) reviewed the research on mediational processes in the mentally handicapped and concluded that the developmentally young, including the mentally handicapped, do not tend to spontaneously utilise elaboration techniques to enhance recall,although they can be trained to employ them. A number of studies have found that "... either providing individuals with verbal or visual elaborations, or instructing them in the use of such elaboration, results in a clear improvement in performance." (Campione & Brown, 1977, p.380).

Metamemory

Some researchers feel that attempts to extensively train specific memory strategies with the mentally handicapped will not yield the most satisfactory results, since it seems that automatic generalisation of these strategies to other situations cannot be assumed. One would then be left with the prospect of extensive and detailed strategy training for every type of memory task. Instead, Butterfield et al.(1973), who succeeded so admirably in improving recall performance through complex training of an individual task, decided that it might be more profitable to train the subjects' "... awareness and control of their own memory processes." (Robinson & Robinson (1976), p.300), called metamemory and executive control respectively.

Kramer et al.(1980) state that Brown and her associates have undertaken the most extensive research in the area of metamemory. They have investigated abilities of the mentally handicapped to evaluate recall readiness, estimate memory span, appropriately apportion study time, and judge the mentally handicapped's "feeling of knowing experience". From these and other studies it seems safe to say that the mentally handicapped have difficulty in evaluating their memory performance. Further, while most children's ability to perform these metamemorial skills improves with age, the "... improvement is not nearly as dramatic with [mentally handicapped] individuals." (Kramer et al.(1980), p.309). Kramer concludes by saying that knowledge of one's memory system *per se* does not seem to have a great effect on recall performance, but that intensive training and persistent cuing of the metamemorial skills might result in improved performance. (p.310).

Conclusion

In conclusion, the mentally handicapped exhibit deficient memory performance in comparison with normal children. Structural defects may be present; certainly strong evidence exists for deficiencies in utilisation of the important control processes of rehearsal, organisation and elaboration. Such control deficiencies have been ameliorated with the help of extensive training programmes, and improved performance has been maintained for appreciable lengths of time. There is, however, little reported evidence of generalisation of the training to other memory tasks. Training of metamemorial competencies may help to improve generalisation, but further evidence is needed to support this contention.

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DEVELOPMENTS IN TEACHER EDUCATION IN NORTHERN IRELAND, 1949 - 1982

Professor H.M.Knox

Prior to 1945 training colleges in England (as they were then called) were administered by the Elementary Branch of the former Board of Education and enjoyed very little academic status. As a result of the McNair Report of 1944 the English Universities began to set up Institutes of Education from about 1947, which took over from the Ministry of Education and 'validated' a Certificate in Education for students in training in the colleges. In Northern Ireland at that time it was not found possible to go so far, but in 1949 the old two-year course for all teachers in training was superseded by a three-year nongraduate course for primary school teachers and a four-year semi-specialist course for the new secondary intermediate school teachers and a four-year pass and five-year honours 'combined' course for prospective graduate teachers. The latter had some college commitments during their university undergraduate course and had a commitment to take the one-year postgraduate professional course of training.

At that time Local Educational Authority student grants for universities were few and hard to get, and many able candidates, particularly men, were attracted to train for teaching by a more generous policy of training scholarships awarded by the Ministry of Education. In 1961, however, the Ministry adopted the principles of the Anderson Report of 1960 on Grants to Students, which gave mandatory awards for university education on two A-level passes in GCE without any strings attached. The combined course soon fell into abeyance, nongraduate teacher training was adversely affected and the number of men entering teaching dropped greatly.

Among the recommendations of the Robbins Report of 1963 were a change of name to 'colleges of education' and the establishment of a special teachers' degree of B.Ed., in conjunction with universities. In 1965 a so-called 'binary' system of higher education was accepted by the government with an 'autonomous' sector for the universities and a 'public' sector for the new polytechnics and the colleges of education, which thus received full recognition of their proper status. To enable the former, in particular, to teach for degree work a National Council for Academic Awards (CNAA) was also established. In the same year the Lockwood Committee on Higher Education in Northern Ireland recommended a closer link between the colleges and Queen's University, Belfast, and the Ministry set up a special committee to effect this. Stranmillis College, with an independent Board of Governors in place of the former Ministry Committee of Management, and the two voluntary colleges, St. Mary's and St.Joseph's, became recognized colleges of Queen's University in 1967.

A Faculty of Education with a four-year pass B.Ed. degree, was established in January 1968 for entrants with the minimum two A-level passes and in the autumn of that year an Institute of Education was also set up offering a Certificate in Education for the ordinary run of prospective nongraduate teachers. In 1969 the former Teacher's Certificate of the Ministry of Education was abolished and direct control of teacher education in the Belfast area was handed over to Queen's University. Previous restrictions on full recognition of teaching qualifications across the board were removed, and the principle of "a teacher is a teacher is a teacher" who can teach anything a school asks him to was now accepted.

The early 1970's was a period of expansion and stocktaking. In 1972 the James Report on Teacher Education and Training for England and Wales appeared and in 1973 the Lelievre Report on The Education and Initial Training of Teachers in Northern Ireland followed, although little direct action was subsequently taken on either. In the same year the compulsory teacher training of university graduates, which had existed in Scotland since 1906, was introduced in England and Wales and in Northern Ireland. There can be no doubt that the previous absence of such a requirement had been a serious disadvantage to full recognition of the professional status of teachers in general. Finally, in 1974 the Houghton Report on The Pay of non-University Teachers at last gave teachers in the public sector reasonably generous salary scales.

This, however, signalled the high water-mark of expansion, and a period of retrenchment soon followed. It was suddenly discovered that too many teachers were being trained for the country's needs and a painful process of contraction was set in motion in England and Wales. The new polytechnics had entered the field of teacher education and aspersions began to be cast on the 'monotechnic' character of existing colleges of education. The virtues of 'diversification' were suddenly discovered, whereby students pursuing different types of course in the same institution mixed freely, and a series of mergers took place - colleges with universities, polytechnics, or even with other colleges to form what came to be known as 'colleges of higher education'. The recent proposal to merge Jordanstown Polytechnic with the New University of Ulster is the first example of a merger of a polytechnic with a university. Very few 'free-standing' colleges of education were left. One unfortunate consequence was that some colleges had become somewhat disillusioned with the academic constraints of university validation, and many of the new institutions transferred their allegiance to the CNAA for validation of their degrees. There may be some advantage of greater flexibility, but in the long run it is likely to prove a retrograde step in the education of teachers.

For a while it looked as if Northern Ireland might escape this traumatic process, but at a slightly later date it was found that over-expansion had occurred there too. The establishment of both a polytechnic and a second university in the province had resulted, as in England and Wales, in a surplus of teachers. It may be noted in passing that the Education Centre at the New University of Ulster is the only example of a training college being an integral part of a university. The Chilver Committee was set up in 1978 to suggest means of co-ordinating higher education in general in Northern Ireland, and its interim report on teacher education appeared, with proposals now familiar to all, in June 1980. In the meantime, however, certain developments continued. In 1977, in accordance with a national recommendation, a new system of a four-year honours, three-year general B.Ed. degree was established at Queen's University. The reiterated call for an all-graduate literate and numerate teaching profession has led to the current phasing-out of the three-year Certificate course, except for a small number of specialist areas of a less formal academic kind, and the introduction of a requirement of a pass at O level in English Language and Mathematics from all entrants. In 1976 it had been found possible to abolish the Institute of Education and to vest all control in the Faculty itself.

Out of this brief historical review arise some broad general considerations. First, there is the question of nomenclature. It may be doubted whether the term college of education, since it lacks specificity, is a great improvement on the older training college. Just as the French, for instance, lack a word for 'shallow' and the Spanish a word for 'dim', we have no word in common use to denote the specialized study of teacher preparation and simply use the term 'education' in an extended way. There are, however, also colleges of further education and of higher education, in which the term is used in its purely general sense, which is confusing. Secondly, the word 'training' is now regarded as too narrow and we tend to speak of the education and training of teachers, implying a twofold process of personal education and professional competence. In the case of the secondary teacher the subjects he studies under the first head have a dual value in educating him personally and for use in training. This latter value in the case of the primary teacher may sometimes be less immediately obvious, yet he too must equally be an educated person in himself and it would be a pity if cultural subjects were in any sense to be crowded out by 'professional studies'. We all appreciate that the primary teacher needs to know something about handwork, sewing, music and physical education, but such expertise is no substitute for a study in depth of one or more academic subjects. All this prompts the question whether, even if the abler students can cope with an honours degree and professional training in four years, three years are sufficient for any degree including training.

Then there is the question of the so-called monotechnic principle. Here it is surely preferable for an institution to do one thing well rather than a multiplicity of things indifferently. In any case, it is far from certain that the mere *mixing* of students in a polytechnic institution really achieves very much in itself. In *The Idea of a University* Cardinal Newman did, however, set great store by the value of *living together* in halls of residence of students pursuing different courses. With the recent cut-backs Stranmillis College has had places to spare in its halls, and the University, criticized by Chilver for having too few residential facilities, has increasingly taken these up for students from various faculties. It may well be that the present boarding arrangements at Stranmillis are the best answer to any possible drawbacks arising from its concentration on teacher education as such. Finally, there is the difficult question of 'holus-bolus' recognition of a teaching qualification. The teachers' associations heartily welcomed this as a great stride forward when it came and it would not be easy to go back on it now. Yet is it really desirable nowadays for anyone to profess to be free to teach anything he fancies at any level? It is bad enough, though it may seldom happen, for the nongraduate to tackle sixth-form work in a grammar school, but probably far worse, and of more frequent occurrence, for a teacher trained only for secondary work to try his hand at teaching in a primary school. In Scotland such a teacher would require some additional training before being permitted to do so, and there is surely something to be said in favour of *some* restriction on the universal validity of any teaching qualification.

THE DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION: ADMINISTRATIVE STRUCTURE AND EDUCATIONAL POLICY, 1900 - 1906

Kieran R. Byrne

The passing of the Agriculture and Technical Instruction (Ireland) Act in 1899 and the immediate offspring of that legislation, the Department of Agriculture and Technical Instruction inaugurated in 1900, marked the climax of a century-long campaign to have the practical and industrial purpose of education recognised and provided for in Ireland. While nineteenth-century Ireland is noted for the educational progress ushered in by the national school system, the Queen's Colleges and the Intermediate Board, there must be reservations to the proposition that these educational measures exhausted the ambition and aspirations of Irish educational reformers. For, throughout the century a strong sub-culture, comprising a complex of movements and a host of individual writers and commentators, sought to push out the frontiers of the existing educational provision in an attempt to link education more closely with the so-called world of work.

While there was no single or major turning point in the process through which a technical education system was secured there were a number of advances, which perceived retrospectively by the historian, amounted to a considerable legacy by the closing years of the Victorian era. So far as this theme is concerned the nineteenth century may be roughly divided into three primary divisions. The period 1800-1830 witnessed the growth of regional scientific institutions, modelled on the greater Royal Dublin Society founded in 1731, and these were closely followed by the more popular and national mechanics' institute movement. The years 1830 - 1860 saw the Commissioners of National Education attempting to graft an agricultural programme and a number of practical subjects on to their original literary prospectus. This was an era also during which schools of design were established in a number of provincial centres eventually giving rise to the development of a nationwide network of science and art classes under the aegis of the Science and Art Department after 1853. In the meantime, Robert Kane published his Industrial Resources of Ireland[1] which made manifest the industrial potential of Ireland in the context of an industrially oriented system of education.

Finally, and perhaps most arresting, was the period 1860 - 1899. These years were bounded, on the one hand, with the disappointment felt at the failure to secure a separate home-based Science and Art Department for Ireland in 1869[2] and, on the other, with the achievement of that very objective in 1899 resulting from the passing of the Agriculture and Technical Instruction Act. This was a period marked by a convergence of arguments and a growing consensus that the welfare of the Irish economy hinged largely on the question of an appropriately designed educational infra-structure. A new era of educational rehabilitation was dawning, and the advocates of technical education rallied in what proved a final and successful campaign to have Irish education address itself more fundamentally to the question of work-related education. The Royal Commission on Technical Instruction in 1881 provided the forum at which a procession of witnesses expressed their dissatisfaction with the prevailing educational provisions for their neglect of the world of industry, agriculture and commerce. The book of evidence was a concerted cry for corrective action,[3] and then with accelerating pace, the national school system and the intermediate system in turn were the objects of a new prescription for practical education proposed in the recommendations of the Belmore and Palles Commissions[4] respectively. Closely attendant on these developments was the monumental report of the Recess Committee. This privately commissioned report, propelled in the main by the enterprising and dynamic Horace Plunkett, re-asserted the industrial purpose of education and called for the establishment of an Irish department to administer to the unique needs of a faltering Irish economy.[5]

The frame of reference for this campaign was a century, the transience of which when viewed in the aggregate, was one of social and economic revolution, and as the pace of that revolution increased it bore in very closely upon matters educational. Potent in their implications for education were Balfour's 'Coercion and Concilation' campaign of the 1890's and the impact of the policy of moderate Unionists which sought to stem the tide of Home-Rule sentiment with a plan of amelioration, known as 'Constructive Unionism'. Here was a political climate which gave rise to a series of legislative measures - a sequence of reform on the vexatious land question, the establishment of the Congested Districts Board, the Local Government Act of 1898 and the Agriculture and Technical Instruction Act one year later. Such policies were calculated in their collective impact to secure the tranquillity of Ireland while at the same time they hoped to cancel, or at least postpone, the restoration of self-government to Ireland.

In plotting the evolution of social, including educational developments, and political developments in nineteenth-century Ireland, one becomes particularly aware that the establishment of the Department of Agriculture and Technical Instruction may not be attributed to any one particular event or individual. Like most historical events, it resulted from the interplay of many factors which were at times disparate and submerged and then finally convergent and overt. That is not to say, however, that Ireland's champions of technical education, Robert Kane, W.K.Sullivan, Horace Plunkett, Arnold Graves, or Thomas Patrick Gill, ought to be removed to the fringe of a portrayal of the growth of technical education in nineteenth-century Ireland. For, whichever may be greater, the movement or the man, it is self-evident that ideas and trends and forces do not walk around on their own legs but are realised in the moral fibre, the intellectual capacity and the flesh of principal leaders such as those listed.

Finally, in an attempt to reconstruct a more complete picture of the Department of Agriculture and Technical Instruction, two other factors must be acknowledged. Firstly, the Act in question does not fit comfortably into the category of educataional legislation. It was an Act which created a polyglot department with wide-ranging and diversified functions dealing as it did with agriculture, forestry, land reclamation, fisheries, and education, agricultural as well as technical. Technical education was, therefore, but one of the many components, and, to the casual observer, one that might be underestimated amidst the maze of other functions. Secondly, the structure and administrative mode of the Department were based on the principle of decentralisation. Therefore, to fully appreciate the impact of the Department, one must examine its performance at both central and local levels. For, the Department drew its motive power not only from the organisational skill and tenacity of purpose of its central administrators, but equally from the dynamics of local resolve and public spiritedness, in addition to the long-cherished tradition of self-government.

As already observed the Agriculture and Technical Instruction Act was not in the strict sense of the term an 'Education Act'. Its general governing principle was the regeneration of Irish industrial and economic life. The officially stated purpose of the Act was the establishment:

> ...of an Irish Department of State, so constituted as to be representative at once of the Crown, the recently created local government bodies of the country, and those classes of the people with whom its work is chiefly concerned; and to give to this authority the function of aiding, improving and developing the agriculture, fisheries, and other industries of Ireland, in so far as may be proper to such a Department, and in such a manner as to stimulate and strengthen the self-reliance of the people.6

Towards that end, the introduction of a system of technical education suitably designed to meet the requirements of industrial growth was acknowledged as an essential component. The Act not only recognised the importance of technical education, but insisted that any such system be administered by a state department committed specifically to industrial and economic expansion. Thus, an innovative and original industry-education tandem had been established.

Arranged under three parts and thirty-five sections, the Act, in its main provisions, established a structure that provided for a decentralised, democratized means of administration. Section 7 provided for the establishment of what might be called representative advisory committees, a Council of Agriculture, an Agricultural Board and a Technical Instruction Board.[7] The general purpose of these assemblies was to assist the Department in decision-making, and to bring to bear upon the policies of the Department the reactions and opinions of interested parties at national and local level.[8]

Under Section 2, the Department now administered a number of reponsibilities which hitherto had been scattered amongst the various branches of Government. In relation to technical education, the Department gathered under its charge the administration of the grants for science and art and technical instruction, previously transacted at South Kensington in addition to taking responsibility for public buildings and institutions formerly under the control of the Science and Art Department. Finally, the duties of the Commissioners of National Education in connection with the Albert Institution and the Munster Institution, were transferred to the new Irish Department.[9]

In a further attempt to achieve harmony between the various state educational agencies a Consultative Committee of Education was introduced under Section 23 of the Act.[10] Technical instruction, it was generally agreed, must be assured an auxiliary framework. Accordingly, the Consultative Committee of Education was to constitute one representative of the Commissioners of National Education, the Intermediate Board of Education, the Agricultural Board and the Technical Instruction Board respectively. The Vice Chairman of

Department was to act as Chairman of the Committee. The stated function of the Committee was one of 'co-ordinating educational administration'.[11]

Financial accommodation was afforded the Department under three heads. First there was the Annual Endowment Fund of £166,000. For the purpose of distribution that sum was divided on a triennial basis into three sections: Agriculture, Technical Instruction and Sea Fisheries. A total of £55,000 was allotted the Technical Instruction Branch. There were two additional sources of income available: the grants formerly administered by the Department of Science and Art at South Kensington and the grant in aid of technical instruction as defined in the Technical Instruction Act of 1889.[12]

It will be convenient at this juncture to examine the distribution of the £55,000 allocated to the Technical Instruction Branch. Acceptable criteria for the disbursement of that sum engaged much of the attention of the earlier meetings of the Board of Technical Instruction. The outcome of these deliberations was a two-way division: £25,000 for the county boroughs and £30,000 for areas of Ireland other than the county boroughs.[13]

The Department made it known from the outset that its policy was 'not to distribute money to localities but to apply financial support and skilled assistance to approved schemes for giving effect to specific purposes, for the attainment of which the Department had been established'.[14] The new local government structure created under the Local Government (Ireland) Act, 1898, was exploited by the Department in pursuit of that policy.

Acknowledging that local authorities were undertaking responsibility for the organisation of technical instruction for the first time, the Department in 1900, issued an explanatory document entitled Suggestions for the Guidance of Local Authorities and others in preparing Schemes of Technical Instruction for Approval by the Department.[15] In addition to its 'Suggestions and Guidance' aim,the document set down the conditions to be fulfilled in order to qualify for departmental recognition and support.

The purposes to which the money distributed by the Department might be applied were first explained. The funds were to be expended towards 'supplying instruction in the principles of science and art applicable to industries, and in the application of special branches of science and art to specific industries or employments'.[16] Included under that head were buildings, apparatus, library stock, scholarships, and teachers' salaries. In return for its financial subvention, the Department insisted on a number of conditions. A proportionate local contribution from a rate levy or some other sources was required. Departmental inspection was to be facilitated at all times by institutions or classes availing of its grants. Only teachers with qualifications from recognised examining authorities might be employed. Attendance registers were to be accurately kept. Timetables and all financial estimates were to be submitted for departmental approval.[17]

In less assertive tones the local councils were urged to delegate responsibility for technical instruction schemes to specifically commissioned committees - technical instruction committees. The technical instruction committees were not limited to any particular number of representatives. They should, it was suggested, be constituted of representatives of the local council and

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'of existing educational institutions and other qualified persons'.[18] The function of the local technical instruction committee was to devise and discharge schemes of technical instruction for the locality over which the local council had jurisdiction. Technical instruction committees were further advised to appoint a full-time secretary to undertake all administrative work attached to their responsibilities.[19]

In addition to the Suggestions and Guidance document, technical instruction committees were provided with the advice and guidance of departmental inspectors while schemes of instruction were being formulated. To secure departmental sanction schemes were to be devised in accordance with a particular mode issued by the Department. That procedure demanded that each technical instruction committee specify its geographical jurisdiction in addition to its population and the sum of the rate levied in aid of the scheme. The chief industries of the locality were to be described, and the scheme in its objectives and range of subjects was to correlate to the requirements and interests of the industrial hinterland.[20]

The origin and genesis of the Department of Agriculture and Technical Instruction determined its role as a strategy towards the regeneration of the Irish economy. Technical instruction, as observed, was identified as a key component of that strategy. From the outset, however, the Department in its policy statements made clear that it was not content to be cast in a mere functionalist mould. Giving expression to a liberal and imaginative interpretation of the responsibilities thrust upon it, the Department stated it did not require that:

> ...Ireland, at this period of transition in her educational history, should fall into the mistake which... has been committed elsewhere, of underestimating the value of the human and ethical parts of education even in the direct production of utilitarian results. 21

Expanding upon that principle, the Department contended "that a sound general education is the essential basis of all true technical instruction and that character forming should be looked upon as a principal object in every phase of education whether general or technical".[22]

These statements of intent merit closer scrutiny. It is to be observed that the Department's system of technical education was secular and non-denominational and notable by its absence was any overt attempt by the various religious denominations to stamp their authority or character upon the technical school or technical instruction committee. In the place of a religious ethos, however, the Department was clearly anxious to establish a life-ethic and a sense of civic reponsibility as a central component in its educational philosophy. To consider this emphasis in a wider context is instructive. That policy bore many of the characteristics of Samuel Smiles' Self-Help: With Illustrations of Character and Conduct first published in 1859. Here Smiles argued that morality was the key to national prosperity and urged that 'knowledge must be allied to goodness and wisdom and embodied in upright character... else it is naught. ...The acquisition of knowledge may, it is true, protect a man against the meaner felonies of life but not in any degree against its selfish vices unless fortified by sound principles and habits'.[23] Closely following the Smilesian prescription came John Scott Russell's Systematic Technical Education for the English People in 1869.

"The wealth of a nation", wrote Russell, "depended more on good citizens than it did on good dollars."[24] Subsequently, the objective of citizenship education was included in taxonomies of educational objectives of which those outlined by Herbert Spencer and Franklin Bobbit, are but two.[25]

Returning to the Irish context one finds that the Department of Agriculture and Technical Instruction kept faith with that creed. This response may be attributed in large measure to the thinking of Horace Plunkett. In much of his writings character education was a central theme. His uncompromising and austere Ireland in the New Century was, on his own admission, provoked by what he described as "our failure to rise to our opportunities".[26] That failure in Plunkett's view stemmed from "certain defects of character not ethically grave but morally paralysing" and here he referred specifically to moral courage, initiative, independence and self-reliance.[27]

Accordingly, throughout its short career, the Department sought to advance the model of the good citizen. At the official opening of the Cork Technical Institute in 1912, T.W.Russell, Plunkett's successor as Vice President of the Department, declared that "the education which does not seek to form and to build up character misses what ought to be its great aim and end."[28] Knowledge and technical skill were not, therefore, the only attributes which the technical school could bequeath to industry. This was a theme to which T.P.Gill, Secretary at the Department, often turned. His anxieties were no doubt inflamed by the simmering industrial unrest which eventually boiled over with the Dublin Lock-Out of 1913.[29] Calling on the technical school to inculcate the correct doctrine lest the rising generations of workers be outwitted by radical demagogues, Gill urged a return to the enobling principles of the guild system of apprenticeship. Vivifying that image, Gill wrote in 1913:

> Before our time when a boy left school to be bound to a trade his education was continued in the workship of his master and afterwards through the craft guild. He was subject to the authority of his master...in everything; and the master was bound not only to teach him 'the art and mystery' of his trade but to see to his bringing up in every way so that he might be fitted ultimately to become a worthy member of his craft and a proper citizen. ... We must then in our education of the working man achieve the same end for him as before... the end of making him a master of his craft and a proper citizen.[30]

In 1906, after protracted negotiation with the Treasury, the Department introduced a new programme to the technical school in Ireland in place of the random collection of subjects that heretofore operated under the Science and Art Directory.[31] The most significant features of the 'Revised Programme', as it later became known, was the introduction of a 'Course System' and a 'Preparatory Programme'. The positive impact of the Course System was considerable. As a result, pupils were required to take a specifically designed interrelated course to extend over a period of three or four years. It removed what was aptly described as "that aimless discursiveness and dilletanteism which were so common when the educational menu placed before a student consisted of 26 scientific dishes ... from which he selected such items as seemed most likely to suit his appetite rather than his needs."[32] Further, technical instruction committees were encouraged to make available such courses as would readily meet the demands of local industries and thereby enhance the growth prospect of industry and technical education at once. As technical schools adapted curricula suited to individual needs, a welcome diversity among the various schemes emerged.[33] In contrast to the traditional rigidity of the national and intermediate systems of education here was a significant departure.

The introduction of Preparatory Courses to provide a connecting medium between primary school and technical school made manifest the Department's prescript for constructive and coherent planning. It was a manifestation of another factor also; the continued failure of the primary school to provide the technical school with an adequately prepared pupil.

Censure of the ill-preparedness of in-coming pupils to meet the standards required in the technical school was common-place. In this regard the experience of the Cork Technical Institute provides one example from the many possible. Here, examinations were held by the Institute at the termination of each session. Until 1906, the results achieved in the applied and theoretical areas were combined to give an aggregate mark. That method was deemed unsatisfactory, however, in that it did not specifically reflect ability in the distinctive applied and theoretical spheres. The trend was in fact that students scored highly in the applied area but very poorly in the theoretical area.[34] To reverse this imbalance, new regulations were introduced in 1906; students were now required to pass both papers separately. The repercussions of this departure were soon felt. At the sessional examination in the bootmaking class in 1906 the total number of students, 16 in all, failed due to their performance at the theoretical examination.[35] Sharply critical of that outcome Mr.E.A. O'Keeffe, the headmaster, stated:

> ...attention should be called to the low standard of education amongst the trade apprentices in Cork. A large section of them appear to think that having secured apprenticeship to a trade, they have no further need for general education. In too many cases this spirit is tolerated, if not fostered, by their parents and guardians who withdraw them from school and apprentice them to a trade at an age when they are practically irresponsible. 36

Projecting the national dimensions of that problem much later, the annual report of the Department for the year 1914/15 declared:

> Attention has more than once been drawn to the fact that a large number of students offering themselves for instruction in Technical Schools are quite unable to avail themselves of the advantages conferred by such institutions owing to the extremely low standard of their general elementary education... a very large number of students have not sufficient education to justify admission even to an Introductory Course. 37

Notable by its absence from the educational policy of the Department until 1911 was the traditional assessment mode of written examination. That omission did not occur by default but by a conscious decision on the part of the Department. On disentangling the motives involved here one finds them to be both politic and educational. While it never admitted as much publicly, the Department, it would seem, was well aware of its own vulnerability as it attempted to organize a system for which there was no precedent in Ireland. The immediate introduction of examinations before the

Department was given time to mature and justify itself, therefore, might well have proved imprudent. The qualifications awarded by a new institution might not be widely recognised. It was acknowledged that the Department was not in a position to compete with the reputable and long-established Science and Art, Society of Arts, or London City and Guilds examinations. The Department may have believed that to apply commonly accepted examination standards would be too rigorous a demand for a system in its initial stages. Failure to apply such criteria might, on the other hand, result in the examination award being disclaimed. A qualification, then, that had a limited recognition and the quality of which remained to be established, could contribute but little to the confidence of the Department or the people it wished to serve.

The official policy of the Department was, however, carefully dredged of anything that might support lack of confidence. It represented to the people that the no-examination policy was a reasoned and deliberate strategy. The reasons advanced were clear-sighted. A centralised examination procedure stunted the prospect of diversity amongst the various technical schools. The examination purpose might deflect attention from the objective of adapting and devising curricula to suit local requirements and thereby threaten the whole decentralisation concept of the system. Finally, it was stated that the Department preferred to allow the system to evolve at its own pace rather than be hurried into decisions by examination pressure.[38]

By 1911, a number of circumstances had changed the Department's thinking on the matter of examinations. The introduction of the Course System to technical schools in 1907 rendered the content of external examinations unsuited to pupils pursuing the Department's courses. While many technical schools introduced their own appropriately devised examinations, it was becoming increasingly obvious that a national awarding body was needed to monitor and attach credibility and prestige to the qualifications achieved in the technical school. The Department could no longer stay its hand. In 1911, a New Scheme of Examinations for Technical Schools was announced.[39]

A dismissal of the career of the Department of Agriculture and Technical Instruction as one of high aspiration and low achievement might be easily pardoned. The novelty of the enterprise, the acute shortage of finance, the lack of a building fund, the relative immaturity of local government structures, a thinly scattered rural population and a heterogenous industrial framework all combined to render the task of establishing a national system of technical education a formidable challenge indeed. In addition there was the problem of the inadequately prepared incoming pupils. On the political front, the Department was the object of hostility from that section of Nationalist sympathisers who viewed it as a decoy to the Home Rule objective rather than a means towards it. The Department, therefore, essayed forth in its attempt to woo the Irish populace in what was a love-hate environment.

Notwithstanding all of these difficulties, however, it may be said that the Department was more remarkable for the consensus it secured than for the conflict it aroused, more notable for what it achieved than for what it left undone. Its policies were skilfully designed and progressive. By introducing an inspectoral system in place of the established payment by results strategy the Department was at once reacting against the entrenched theories of the Victorian concept of education while at the same time charting a new course for educational development in the present century. Equally significant was the manner in which an attempt was made to set the functionalist aspirations of training in the context of a general education. If the promise of greater co-ordination between the various branches of Ireland's educational system so eloquently advanced by the Department remained unfulfilled, that is not to detract from the qualitative substance and sober sense of the theory.

Turning to the administrative context there can be little doubt but that the Department provided an important blueprint and object lesson of the potential of a decentralised system of education. While there were, understandably, tensions between central headquarters and local committees, most notably at Dublin and Limerick, the total picture is one of constructive harmony. It has been argued that the Department played too patriarchal a role in retaining a veto on many important issues, finance and appointments especially. That outcome, however, was more a consequence of the local technical instruction committees endeavouring to locate and secure themselves in an unfamiliar role than it was an expression of departmental autocracy.

The Department also encouraged flexibility in the design of the technical institutes' programme. Subjects were appended or changed, cancelled and re-introduced, as the need arose. Furthermore, the traditional productive purpose of technical education was expanded upon to include the marketing or commerical dimension as well. The character of the institutes that evolved then over the period 1900 to 1922 was an all-embracing polytechnic one which provided a basis for the subsequent 1930 Vocational Education Act.

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AN ANALYSIS OF THE PROCESSES USED BY CHILDREN TO RESPOND TO SELECTED MATHEMATICAL TASKS

John S. Close*

In mathematics the formal assessment of children's learning has tended to concentrate on the product of children's performance of mathematical tasks rather than on the process, method, or strategy used by the children to arrive at the product. This may be due, principally, to three things: (i) the high cost in time and effort of interviewing children individually and/or analysing written work in order to assess process, in comparison to the ease of group testing with objective tests to access product; (ii) widespread acceptance of the view that the important criterion of success in performing mathematical tasks is the production of the correct answer without regard to the way in which the answer is obtained; and, (iii) the view that information on processes is not sufficiently reliable or valid. It is the purpose of this study to demonstrate that examination of the processes used by children to perform mathematical tasks can provide useful information on the conceptual maturity of their method of responding to the tasks, and, in the case of pupils obtaining the incorrect answer, on the kinds and sources of errors made by them. Such information may be difficult, if not impossible, to obtain from pencil and paper objective tests.

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Standardised objective mathematics tests developed in recent years, have, in addition to assessing computational skills and problem solving performance, attempted to assess children's understanding of mathematical concepts. Although, on such a test, a pupil may demonstrate understanding of the concepts involved in the standard approach to carrying out an algorithm or solving a problem, he may not effectively relate and apply them in actually performing the algorithm or solving the problem. Rather he may use a less mature, less mathematically sophisticated, process to obtain the solution or product. Standardised pencil and paper tests can only provide a partial picture of the nature of children's mathematical thinking and understanding.

The overemphasis on the products of learning in mathematics and the neglect of process was highlighted nearly forty years ago by William Brownell (1944). Brownell conducted a number of studies between 1930 and 1970 in which he used the personal interview technique and analysis of written work to assess the conceptual maturity of primary school children's methods of performing tasks in arithmetic (Brownell 1944, 1963). Results from these studies indicated that children who obtained correct answers to computational and problem solving tasks used a variety of processes which could be readily classified according to conceptual maturity. More recently, Peck and Jencks (1981) and Clement (1982) used the interview technique to analyse the thought processes and conceptual understanding of student on fractions and algebra tasks. Desforges and Desforges (1980) examined the development of children's number-based sharing strategies across three age levels by interviewing children aged four to six years. They found that the children used several sharing strategies; with the older children using more efficient strategies than the younger children. In an analysis of the computational errors of third and sixth grade children Englehardt (1977) identified eight categories of errors. Knifong (1976) categoried children's errors in performing arithmetic word problems and found that clerical and computational errors accounted for much of the children's errors. Clements (1980) describes the use of the interview technique combined with a hierarchical error analysis procedure to study children's difficulties with word problems.

The present survey set out to investigate the kinds of processes and strategies used by a sample of Irish primary school children to respond to selected computational and problem-solving tasks, and to attempt to classify processes according to the kind and level of conceptual understanding involved. The kinds of error pupils made on the tasks, and the kinds of pictorial or concrete aids used, were also recorded and examined.

METHOD

Sample

Nine pupils were selected from each of twenty-four classes in second, third, fourth and fifth standards in two city primary schools - one boys' school and one girls' school. Teachers were asked to include, among the nine pupils selected, three pupils from the lower third (in terms of achievement) in the class, three from the middle third, and three from the upper third, (each class was divided into three groups on the basis of performance on a mathematics attainment test). The description of the final sample is given in Table 1. (The orginal sample numbers are in parentheses).

TABLE 1

Description of the study sample

	Standard 2 (8-9yr.olds)	Standard 3 (9-10yr.olds)	Standard 4 (10-11yr.olds)	Standard 4 (11-12yr.olds)	Total
Girls	25(27)	26(27)	27(27)	25(27)	103
Boys	25(27)	24(27)	26(27)	26(27)	101
	50	50	53	51	204

The loss of twelve pupils from the original sample resulted from the decision to exclude from the analysis those pupils who had not taken the mathematics test. (The test had been administered to all the pupils in the classes about a month before the interviews took place).

Inctruments

Two interview schedules, based on schedules used in previous studies, were designed by the writer.
The first Schedule was used to report and categorise the processes and strategies used by the children in second and third standards to respond to; (i) an addition fact task and a substraction fact task; (ii) a multi-digit addition task and a multi-digit substraction tack; and,(iii) an addition word problem and a substraction word problem. The second interview schedule was used to report and categorise the processes used by the children in fourth and fifth standards to respond to;

(i) a multiplication fact task and division fact task; (ii) a multi-digit multiplication task and a multi-digit division task; and, (iii) a multiplication word problem and a division word problem. The description of the process categories is as follows:

(1) Basic Facts

A. Addition : 6 + 7 =[ ] :

1. Meaningful recall : Pupil produces a response, quickly, (generally correct), and easily, and clearly explains the meaning of the task. e.g. "if we take 6 things and 7 things and put them together we have 13 things".

2. Partial sums : Pupil makes use of one of the properties of operations with whole numbers to arrive at the answer. e.g. 6 + 7 = 10 + 3 = 13 (Associative property) i.e. breaks an addend(7) into two further addends (4 + 3) one of which makes 10 with the other addend (6); or 6 + 7 = 7 + 6 = 13 (commutive property).

3. Counting on : Pupil obtains a response by counting on from one or other of the two addends (usually the larger one), often using fingers, objects or marks on paper, e.g. "eight, nine, ten,--- thirteen".

4. Counting 3 sets : Pupil counts out one addend (6), then the other addend (7) then the sum (13), often using marks or counters.

5. **Tables** : Pupil recites part of 'Tables' to reach (correct) appropriate fact and therefore appropriate response e.g. "6 + 1 = 7", "6 + 2 = 8", ... "6 + 7 = 13".

6. **Rote recall** : Pupil obtains response quickly, but cannot explain clearly and readily the meaning of the task. (No apparent understanding of the task).

7. **Other** : includes processes which can not be included under any of the above specified categories.[1]

S. **Substraction : 13 - 4 = [ ]**

1. **Meaningful Recall** : same as A.1.

2. **Partial Difference** : same as A.2 e.g. 13 - 3+1) = (13-3) - 1 = 10 - 1 = 9.

3. **Counting Back** : Pupil obtains response by counting back, from the sum (Minuend), a number of steps equal to the subtrahend (4).

4. **Counting Forward** : Pupil counts forward from the subtrahend (4) to the sum (13) to obtain response, often using fingers or objects or marks.

5. **Tables** : same as A.5.

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[1] Interviewers were asked to comment on undetermined responses so that writer could make a final decision on whether or not the process belonged to one of the specified categories.

6. Rote Recall : same as A.6.

7. Other : same as A.7.

M. Multiplication : 6 x 5 = [ ]

1. Meaningful Recall : same as A.1.

2. Partial products : same as A.2, e.g. 6 x 5 = (6 x 3) + (6 x 2), = 18 + 12 = 30 (Distributive property).

3. Repeated Addition : Pupil obtains response by using 'repeated addition' strategy, i.e.
6 x 5 = 5 + 5 + 5 + 5 + 5 + 5 = 30 or
6 + 6 + 6 + 6 + 6 = 30.

4. Counting : Pupil counts out total in five sets of six, or six sets of five (possibly using marks on paper).

5. Tables : same as A.5.

6. Rote Recall : same as A.6.

7. Other : sames as A.7.

D. Division : 56 ÷ 8 = [ ]

1. Meaningful Recall : same as A.1

2. Partial quotients : same as A.2., e.g. (56÷8) = (48+8) ÷ 8 = (48 ÷ 8) + (8÷8) = 6 + 1 = 7. or 56 ÷ 8 = (64-8) ÷ 8 = (64÷8) - (8÷8). = 8 - 1 = 7.

3. Multiplication method : Pupil uses knowledge of appropriate multiplication fact (8 x 7 = 56) to obtain response.

4. Repeated Substraction : same as M.3. e.g. 56 ÷ 8 = ((((((56 - 8) -8) -8) -8) -8) -8) -8 = 0.   i.e. 56 - 7(8s) = 0.

5. Counting : same as M.4.

6. Tables : same as A.5.

7. Rote Recall : same as A.6.

8. Other : same as A.7.

(2) Multi-digit Algorithms

MA : Multi-digit addition $\begin{array}{r} 55 \\ + \ 37 \\ \hline \end{array}$

1. Standard (vertical) algorithm (meaningfully): pupil uses the standard method (or expanded version of it) to obtain response and provides an explanation of the procedure in terms of the operation and the basic place value ideas involved, e.g.

$$\begin{array}{r} 55 \\ + \ 37 \\ \hline 92 \end{array} \quad \text{or} \quad \begin{array}{r} 55 \\ + \ 37 \\ \hline 12 \\ 80 \\ \hline 92 \end{array} \quad \text{or} \quad \begin{array}{r} 50 + 5 \\ 30 + 7 \\ \hline 80 + 12 \\ = 92 \end{array}$$

2. Indirect (Non-standard) algorithm (meaningfully): pupil uses a non-standard algorithm to obtain response, e.g.

$$55 + 37 = 56 + (30+7) = 85 + 7 = 92 \quad \text{or} \quad 55 + (40-3) = 95 - 3 = 92$$

3. Counting method : Pupil uses counting in tens strategy to obtain response, e.g. 3 tens + 5 tens ⟶ 30, 40, 50, 60, 70, 80; 7 + 5 = 12 + 80 ⟶ 90 + 2 = 92.

4. Standard algorithm (rote) : pupil uses the standard method to obtain response but cannot provide an explanation of procedure in terms of the operation and place value ideas involved.

5. Other : same as A.7.

MS : Multi-digit Substraction : $\begin{array}{r} 74 \\ -\ 38 \\ \hline \end{array}$

1. Standard algorithm (meaningfully) : same as MA 1, e.g.

$$\begin{array}{r} 64 \\ -38 \\ \hline 36 \end{array} \quad \text{or} \quad \begin{array}{r} 74 \\ -38 \\ \hline 36 \end{array} \quad \text{or} \quad \begin{array}{r} (70+4) \\ -(30+4) \\ \hline \text{etc.} \end{array} \quad \text{(expanded algorithm)}$$

(with explanation of procedure)

2. Indirect (Non-standard) algorithm : same as MA.2.

e.g. $74 - (30+8) = 44 - 8 = 40 - 4 = 36$
or $(74-40) + 2 = 34 + 2 = 36$.

3. Counting method : Same as MA.3, e.g.
   $(((74 - 10) - 10) - 10) - 8 = 44 - 8 = 36.$

4. Standard algorithm (rote) : same as MA.4

5. Other : same as A.7.

MM : Multi-digit Multiplication : $\begin{array}{r} 65 \\ \times 36 \\ \hline \end{array}$

1. Standard algorithm (mean) : same as MA.1, e.g.

$$\begin{array}{r} 65 \\ \times \quad 36 \\ \hline 390 \\ 1950 \\ \hline 2340 \\ \hline \end{array}$$

(with explanation of procedure)

2. Indirect (Non-standard) algorithm : same as MA.2, e.g.

$$\begin{aligned} 65 \times 36 &= (36\text{x}60) + (36\text{x}5) \\ &= (30\text{x}60) + (60\text{x}6) + (30\text{x}5) + (6\text{x}5) \\ &= 1800 + 360 + 150 + 30 = 2340 \end{aligned}$$

or $(65\text{x}6) \times 6 = 390 \times 6 = 2340$ (with explanation).

3. Counting (and addition) method: Same as MA.3, e.g.

$$65 + 65 + \ldots = 2340$$

4. Standard algorithm (rote) : Same as MA. 4.

5. Other : SAme as A.7.

MD : Multi-digit Division : $6\,\overline{)2406}$

1. Standard algorithm (mean.) : same as MA.1., e.g.

$$\begin{array}{r} 6\,\underline{)2406} \\ 401 \end{array} \qquad \text{or} \qquad \begin{array}{r} 401 \\ 6\overline{)2406} \\ \underline{24} \\ 006 \\ \underline{6} \end{array}$$

2. Indirect (Non-standard) Algorithm (mean.) : same as MA.2, e.g.

$$\begin{array}{rrl} & 2406 & \\ - & \underline{600} & (100) \\ & 1806 & (100) \\ - & \underline{600} & \\ & 1206 & \\ & & \text{etc.} \end{array} \qquad \text{or} \qquad \begin{array}{r} 2400 \div 6 = 400 \\ 6 \div 6 = \underline{1} \\ 401 \end{array}$$

3. Counting method : same as MA.3, e.g.

$((2406 - 6) - 6) - 6\ldots..$ (attempted).

4. Standard algorithm (rote) : same as MA.4.

5. Other : same as A.8.

(3) Problems

AP : Addition Problems[2]

1. High understanding : Pupil obtains response quickly and readily and clearly explains how

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[2] Category (1) (above) and categories (2), (3) and (4) (following) were combined for the purposes of the analysis (see results).

and why he got the response (in terms of what is given and what is required), indicating sound knowledge of concepts and computation involved.

2. Moderate understanding : Pupil obtains response after some thought and explains fairly well how and why he got the response (in terms of what is given and what is wanted) - indicating some knowledge of concepts and computation involved.

3. Low understanding : Pupil obtains response rather slowly and hesitantly and provides a vague or incomplete explanation of how and why he got the response - indicating uncertainty in relation to concepts and computation involved.

4. No understanding : Pupil obtains response but cannot provide any explanation of how or why he got it.

SP : Substraction Problem:

Same as AP1, AP2, AP3 and AP4.

MP : Multiplication Problem :

Same as AP1, AP2, AP3 and AP4.

DP : Division Problem :

Same as AP1, AP2, AP3 and AP4.

The categories of processes used in these interview schedules were derived from analyses of the literature (e.g.Brownell, 1963) school mathematics textbooks and discussions with teachers.

The interview schedules also included a section for the recording and categorising of errors made by pupils on the tasks. The error categories were based on those used by Englehardt (1977) and Knifong (1977). The description of the error categories is as follows:

Error Categories :

E1 Clerical (careless) error : Pupil makes a mistake which cannot be attributed to lack of any mathematical knowledge or skill, e.g. pupil writes or reads a number incorrectly. Pupil forgets to include a number during a calculation.

E2 Wrong operation : Pupil performs operation other than appropriate operation, e.g. pupil adds instead of subtracting.

E3 Incomplete Algorithm : Pupil fails to complete all the steps in an algorithm, e.g.

$$\begin{array}{r} 65 \\ \times\ \underline{36} \\ 390 \end{array} \quad \text{or} \quad \begin{array}{r} 400 \\ 6\overline{)2406} \\ 2400 \\ \hline \end{array}$$

E4 Defective Algorithm : Pupil uses an inappropriate algorithm or makes mistake(s) in a standard algorithm.

e.g. $$\begin{array}{r} 74 \\ -\ \underline{38} \\ 46 \end{array} \quad \text{or} \quad \begin{array}{r} 65 \\ \times\underline{36} \\ 390 \\ \underline{1850} \\ \underline{\underline{2240}} \end{array} \quad \text{or} \quad \begin{array}{r} 406 \\ 6\overline{)2406} \\ \underline{2400} \\ 6 \\ \underline{6} \end{array}$$

E5 Number fact error : Pupil did not know a required number fact, e.g.

$$\begin{array}{r} 55 \\ +\underline{37} \\ \underline{94} \end{array} \quad \text{or} \quad 6 + 7 = 14$$

E6 Place value error : Pupil makes a mistake which can be attributed to a lack of knowledge of place value principles.

e.g.

$$\begin{array}{r} 55 \\ +\underline{37} \\ 92 \end{array} \qquad \begin{array}{r} 74 \\ -\underline{38} \\ 56 \end{array} \qquad \begin{array}{r} 55 \\ \times\underline{38} \\ 330 \\ \underline{165} \\ 495 \end{array} \qquad \begin{array}{r} 41 \\ 6\overline{)2406} \end{array}$$

E7 Reversals : Pupil reverses the positions of digits in numerals in copying numerals or in writing algorithms.

e.g.

$$\text{writes} \quad \begin{array}{r} 46 \\ \underline{53} \end{array} \quad \text{as} \quad \begin{array}{r} 64 \\ \underline{53} \end{array} \quad \text{or} \quad \begin{array}{r} 104 \\ 6\overline{)2406} \end{array}$$

E8 Reading difficulty : Pupil appears to be unable to determine 'what is given' and 'what is wanted' in a word problem.

The interview forms included a third section in which the use of any visual or concrete aid was recorded, e.g. marks,dots, fingers, counters. (A reservoir of counters was available for use by pupils if required). The forms also provided for additional comments on the strategies, processes or errors of the children. Pupils were provided with a separate pupil form on which they recorded their calculations and rough work.

Interviews

The interviews were carried out by the writer along with a team of nineteen third year college students completing a course on slow learning in mathematics. The students had been familiarised with the literature on analysis of processes and errors in mathematics and received training on the administration of the interview schedules. The interviews took place over a period of a week in May, 1981.

The children were taken out of their classrooms and brought to a room where the interviews were carried out. They were put at their ease before being asked to perform the tasks. If interviewers were in doubt about the category to which a process or strategy belonged they asked the pupil to perform a second similar task and again attempted to classify the process used. If still in doubt the process was classified as "other" and an appropriate comment was made.

Occasionally pupils used a two-part process with one part belonging to a particular category and the other part belonging to another (e.g. partial sums and counting forward). In this case the process was recorded in both categories. The number of cases where this double classification occurred was very small, or zero, on all tasks and a rough estimate of it can be obtained by subtracting the number of pupils from the total of the frequency counts of processes used on each task. The average interview time was approximately 12 minutes.

Analyses

The data on the interview forms was transferred to computer tape and two analyses were carried out on it. The first analysis provided a frequency count for each of the processes and error categories for each of the tasks. The second analysis provided a cross-classification for selected processes to determine how these processes relate across tasks.

RESULTS

(1) Basic number facts

(a) Addition and subtraction facts (2nd and 3rd standards).

Processes The frequencies of occurrence of the different processes used to respond to addition and subtraction tasks (facts) are given in Tables 2 and 3. The results indicate that substantial differences exist in the numbers of children using each type of process or strategy, with 'partial sums' and 'meaningful recall' being the mostly commonly used for the addition task, and 'partial differences' 'meaningful recall' and 'rote recall', the most commonly used for the subtraction task. There was a marked increase in the use of 'partial sums' and 'partial differences' processes from second and third standard.

TABLE 2

Addition Fact Task : 6 + 7 =[ ]: Response frequencies

2nd Standard : N = 50   Correct : 49, Incorrect : 1
3rd Standard : N = 54   Correct : 54, Incorrect : 0

	Frequence of occurrence		
Process/category	2nd Standard	3rd Standard	Total
Meaningful recall	12	12	24
Partial sums	14	31	45
Counting on	10	5	15
Counting three sets	2	-	2
Tables	7	6	13
Rote recall	9	9	18
TOTAL			117

TABLE 3

Subtraction Fact Task : 13 - 4 =[ ]: Response frequencies

2nd Standard : N = 50   Correct : 37, Incorrect : 13
3rd Standard : N = 54   Correct : 49, Incorrect : 5

	Frequence of occurrence		
Process/category	2nd Standard	3rd Standard	Total
Meaningful recall	10	11	21
Partial differences	8	21	29
Counting back	7	5	12
Counting forward	5	8	13
Tables	1	3	4
Rote recall	13	8	21
TOTAL			100

Errors and aids: Of the eighteen errors made on the subtraction task, 10 were the result of using an incorrect operation and 7 were clerical errors. Visual or concrete aids were utilised on 13 occasions for addition, and on 22 occasions for subtraction.

Cross classification: The results of cross classification of selected processes used in responding to the addition and subtraction fact tasks are presented in Table 4.

TABLE 4

Cross classification of addition and subtraction processes

Process used on addition task	Process used on subtraction task	No.of pupils using: 1st process	2nd process	Both
Partial sums:	Partial differences	39	27	20
Rote recall:	Rote recall	16	19	9
Meaningful recall:	Meaningful recall	21	19	9

Only processes which reflect similar kinds and levels of conceptual understanding,[3] and which were used by a significant number of pupils, were cross-referenced. The figures suggest that pupils who used the 'partial sums' strategy for addition generally used the 'partial differences' strategy for subtraction.

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[3] The processes relating to each task can be placed on a scale of conceptual understanding or maturity ranging from high level of understanding (meaningful recall) to little or no understanding (rote recall or guessing). The order in which the processes are reported in the tables corresponds to their order on such a scale of conceptual maturity.

(b) Multiplication and division facts (4th and 5th Standards)

Processes: The frequencies for processes used to respond to the multiplication and division fact tasks are reported in Tables 5 and 6.

TABLE 5

Multiplication Fact Task : 6 x 5 = [ ]: Response frequencies

4th Standard : N = 53 Correct : 52; Incorrect : 1
5th Standard : N = 51 Correct : 52; Incorrect : 0

	Frequency of occurrence		
Process category	4th Standard	5th Standard	Total
Meaningful recall	13	33	46
Partial products	6	5	11
Repeated additions	3	2	5
Tables	14	17	31
Rote recall	15	3	18
TOTAL			111

Division Fact Task : 56 ÷ 8 = [ ]: Response frequencies

4th Standard : N = 53   Correct : 43; Incorrect : 10

5th Standard : N = 50   Correct : 47; Incorrect : 3

	Frequency of occurrence		
Process category	4th Standard	5th Standard	Total
Meaningful recall	16	23	39
Partial quotients	2	4	6
Multiplication method	12	14	26
Repeated subtraction	1	1	2
Tables	3	7	10
Rote recall	9	2	11
Guessing	1	1	2
Other	6	-	6
Total			102

As with the addition and subtraction facts substantial differences emerge in the numbers of children using each type of process with 'meaningful recall' 'tables' and 'rote recall' being the most popular processes for both multiplication and division and the 'multiplication method' also popular as a process for division. There was also a noticeable increase in the occurrence of 'meaningful recall' from 4th and 5th standard.

Errors: The thirteen errors in division were due to either incorrect operation (4) or clerical error (9).

Cross classification: Cross-classification was applied to three pairs of processes yielding the results in Table 7.

TABLE 7

Cross-classification of multiplication and division processes

Multiplication Process	Division Process	No.of Pupils using: 1st Process	2nd Process	Both
Meaningful recall:	Meaningful recall	47	38	34
Tables:	Tables	31	10	5
Rote recall:	Rote recall	18	11	7

The results suggest that pupils who indicate meaningful recall of multiplication facts are very likely to indicate a similar level of conceptual understanding of division facts. Also, meaningful recall of multiplication occurs to a much greater extent in 5th than in 4th standard.

(2) Multi-digit algorithms:

Processes: The results for the multi-digit addition, subtraction, multiplication and division tasks are reported in Tables 8, 9, 10 and 11. The results indicate that practically all the children used the standard algorithm, either meaningfully or in a rote manner to respond to the four tasks. In the case of the division task, there was a sizeable drop in the numbers of children, using the standard algorithm meaningfully, from fourth to fifth class.

TABLE 8

Multi-digit Addition Task: $\begin{array}{r} 56 \\ +\underline{37} \end{array}$: Response frequencies

2nd Standard : N = 50   Correct : 38; Incorrect : 12
3rd Standard : N = 54   Correct : 48; Incorrect : 6

	Frequency of occurrence		
Process category	2nd Standard	3rd Standard	Total
Standard alg. (mean)	21	36	63
Indirect method	2	-	2
Counting method	3	1	4
Standard alg. (rote)	16	15	31
Other	2	1	3
Total			103
Errors			
Incorrect operation	6	4	10
Defective algorithm	3	1	4
No. fact error	3	2	5
Aids	11	11	22

TABLE 9

Multi-digit subtraction Task : $\begin{array}{r}74\\ -\underline{38}\end{array}$: Response frequencies

2nd Standard : N = 49 Correct : 28; Incorrect : 21

3rd Standard : N = 54 Correct : 37; Incorrect : 17

	Frequency of occurrence		
Process category	2nd Standard	3rd Standard	Total
Standard alg. (mean)	21	30	51
Indirect method	3	-	3
Standard alg. (rote)	19	21	40
Other	2	2	4
TOTAL			98
Errors:			
Incorrect operation	7	5	12
Defective algorithm	4	5	9
No. fact error	5	8	13
Reversals	6	1	7
Place value error	3	3	6
Aids	10	10	20

TABLE 10

Multi-digit multiplication Task: 65: Response frequencies
x36

4th Standard : N = 53 Correct : 37; Incorrect : 16

5th Standard : N = 51 Correct : 35; Incorrect : 16

	Frequency of occurrence		
Process category	4th Standard	5th Standard	Total
Standard alg. (mean)	34	31	65
Standard alg. (rote)	17	16	33
Other	-	2	2
TOTAL			99
Errors			
Incorrect operation	2	1	3
Defective algorithm	2	8	10
No. fact error	9	3	12
Place value	6	6	12

TABLE 11

Multi-digit Division : Task 2406 ÷ 6 = [ ]

Response Frequencies

4th Standard : N = 53 Correct : 38; Incorrect : 15

5th Standard : N = 51 Correct : 41; Incorrect : 10

	No. of pupils using process		
Process	4th Standard	5th Standard	Total
Standard alg. (mean)	29	17	46
Indirect method	2	-	2
Standard alg. (rote)	23	32	55
Errors			
Incomplete algorithm	4	2	6
Defective alg.	4	4	8
No. fact error	2	-	2
Place error value	7	10	17

Errors and aids: The most common errors on the multi-digit addition and subtraction tasks were (i) incorrect operation; (ii) number fact errors; and (iii) defective algorithm. In subtraction there were seven cases of reversals i.e. where children erroneously subtracted the smaller number from the larger number (in the units position). Defective algorithms and number fact errors were the most common sources of error in multi-digit multiplication and division. Aids (usually finger-counting) were used by 20 per cent of pupils in addition and subtraction processes.

Cross classification: The results of cross classification of the results for the standard algorithm processes are presented in Table 12. They indicate that when rote recall is the process used by children for the addition task they often use a similar process for the subtraction task. Similar results were obtained for the multiplication and division tasks.

TABLE 12

Cross classification of the multi-digit algorithm processes

Addition	Subtraction	No.of pupils using: 1st Process	2nd Process	Both
Standard alg. (Rote):	Standard alg. (Rote)	31	40	23
Standard alg. (Mean):	Standard alg. (Mean):	51	45	32
Multiplication	Division			
Standard alg. (Rote):	Standard alg. (Rote):	33	54	21
Standard alg. (Mean):	Standard alg. (Mean):	60	39	29

(3) Word Problems.

The results forthe four word problem tasks (Tables 13, 14, 15 and 16) indicate that in general, children indicated a moderate or high level of understanding of the tasks more often than little or no understanding.[4] For the addition and subtraction problems the level of understanding improved from 2nd to 3rd standard.

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[4] Interviewers found it difficult to distinguish between moderate and high, and low and no, understanding so results for each pair of categories were taken together.

Errors: The most commonly occurring errors were (i) incorrect operations; (ii) computational errors,and (iii) clerical errors, with incorrect operation being by far the most common error.

Cross-classification: The results of cross-classification of the results for levels of understanding of addition and subtraction indicate that if a pupil demonstrated a high level of understanding on the addition task he very likely demonstrated a similar level of understanding on the subtraction task. Similar results were obtained for multiplication and division.

TABLE 13

Addition Problem Task:

Mark spent 27p on fruit and 16p on
sweets. How much did Mark spend altogether?
Response Frequencies

2nd Standard : N = 50 Correct : 37; Incorrect : 13
3rd Standard : N = 54 Correct : 46; Incorrect : 8

	Frequence of occurrence		
Rating of process used	2nd Standard	3rd Standard	Total
High to moderate understanding	38	48	86
Low to no undersanding	12	6	18
Total			104
Error			
Reading difficulty	4	1	5
Clerical error	1	2	3
Inappropriate operation	6	5	11
Computational error	4	2	6

TABLE 14

Subtraction Problem Task:

Nora had 12p. How much more does she need to buy a book costing 53p?

Response Frequencies

2nd Standard : N = 48 Correct : 17; Incorrect : 27

3rd Standard : N = 54 Correct : 36; Incorrect : 17

	Frequency of occurrence		
Rating of process used	2nd Standard	3rd Standard	Total
High to moderate understanding	27	39	66
Low to no understanding	21	13	34
Total			100
Errors			
Reading difficulty	2	1	2
Clerical error	8	4	12
Incorrect operation	10	12	22
Computational error	6	3	9
Other	7	-	7

TABLE 15

Multiplication Problem Task:

Marie bought five packets of biscuits at
27p each. How much did they cost?

Response Frequencies

4th Standard : N = 53 Correct : 52; Incorrect : 1
5th Standard : N = 41 Correct : 48; Incorrect : 2

	Frequency of occurrence		
Rating of process used	4th Standard	5th Standard	Total
High to moderate understanding	50	46	96
Low to no understanding	3	5	7
Total			103
Error:			
Incorrect operation	1	2	3
Computational error	-	2	2
Other	-	-	-

TABLE 16

Division Problem Task:

A ball of string is 96 metres long.
If it is cut into 16 pieces how many
metres long will each piece be?

Response Frequencies

4th Standard : N = 53 Correct : 33; Incorrect : 20
5th Standard : N = 51 Correct : 35; Incorrect : 15

	Frequency of occurrence		
Rating of process used	2nd Standard	3rd Standard	Total
High to moderate understanding	38	34	72
Low to no understanding	14	15	29
Errors			
Clerical error	-	3	3
Incorrect operation	10	6	16
Computational error	8	3	11
Other	2	4	6

DISCUSSION

(1) Basic number facts

Examination of the results suggest that for each number fact task more than half of the pupils interviewed were unable to recall immediately (or almost immediately) the number fact involved, and that a substantial number of those pupils who were able to recall the facts immediately could not justify their response. At the same time the results also indicate that many of the pupils who were unable to recall the facts immediately used a strategy which reflected a high level of understanding of numbers and operations with numbers, i.e. the 'partial sums', 'partial differences', partial products' and 'partial quotients' processes. Also, the increased use of more mature strategies from 2nd to 3rd and from 4th to 5th standard indicates the developmental nature of learning about basic operations.

Counting strategies (usually involving aids) were used by a minority of pupils. The fact that the vast majority of pupils who used the 'partial sums' strategy on the addition task also used the 'partial differences' strategy on the subtraction task could be an indication that learning the 'partial sums' strategy can result in substantial transfer to the learning of the 'partial differences' strategy. That children grasp and make use of the inverse relationship between multiplication and division is suggested by the fact that the majority of pupils who demonstrated meaningful recall of the multiplication fact also demonstrated similar level of maturity of process on the division fact task. A small number of errors were made on the subtraction and division fact tasks which were generally attributed to either incorrect operation or a clerical error. The greater difficulty of these two operations is consistent with the difficulty levels obtained for basic facts on standardised attainment tests.

(2) Multi-digit algorithms

The effects of instruction on the use of the standard algorithms for multi-digit addition, subtraction, multiplication and division can be seen in the results. Practically all the children used the standard algorithms, either meaningfully or mechanically, on the four tasks. The fact that, apart from the division algorithm, more than half the children using each of the algorithms could provide a satisfactory explanation of the algorithms suggests that instruction in them was built on understanding of place value and number properties. That aids (usually finger-counting) were used by many pupils in 2nd and 3rd standard but not in 4th or 5th standards suggest that children eventully drop these aids for more mature processes. The importance of teaching computation for meaning, advocated by writers such as Brownell (1963) and Skemp (1978) may be supported by the cross-classification which indicate that pupils who applied an algorithm meaningfully or in rote fashion on one operation generally applied an algorithm in the same way on the inverse operation.

The results for type and distribution of errors fits in quite well with the results for similar tasks obtained by Engelhardt (1977) the most common error types being (i) number facts; (ii) place value, (iii) defective algorithm. The large numbers of errors on the subtraction and division algorithms suggest that more attention could be given to remediation of computational errors on tasks involving these operations.

(3) Word Problems

The results for the four word problems suggest that the majority of pupils had little difficulty understanding the word problems in terms of being able to identify what information is required by the problem, what information is provided, and the appropriate operations to be carried out with the relevant quantities. The improvement in the level of understanding from 2nd to 3rd standard could be partly accounted for by the higher reading ability of the 3rd standard children.

The distribution of errors shows a very high frequency of occurrence of children using an incorrect operation, (52 instances) particularly on the subtraction and division word problems, with computational errors being the next most frequently occurring error (28 instances). The implications of this data are that the children had difficulty with the word problems because they either lacked the required computational skill or understanding of the basic operations or were unable to apply their skill and understanding to solve the problems.

SUMMARY

The findings of this investigation suggest the feasibility of assessing and categorising the processes children use to respond to basic mathematical tasks using the procedures described. Modification of the procedures might include improved specification of levels of understanding, and ways of responding to, word problems with, perhaps, a hierarchical categorisation of errors on algorithms and problem solving. Detailed information on the reliability of the procedures would also be desirable.

The data obtained from using such procedures can enable the primary teacher to achieve a sharper focus in diagnostic and prescriptive in mathematics teaching, particularly in remedial work.

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SECONDARY SCHOOL MATHEMATICS - THE TEACHERS' VIEWPOINT

Ian F. Wells

1. Background

This paper presents some results from an investigation conducted recently by the Northern Ireland Council for Educational Research (NICER). The full account of this research has just been published by NICER under the title School Mathematics in Perspective.[1] Teachers of mathematics in Northern Ireland were provided with a comprehensive set of descriptions of children's performance across all the mathematics commonly taught to fifteen year olds, and they were given considerable freedom in drawing their own conclusions. This paper describes a little of what they chose to say.

The paper goes on to provide information on how this research was conducted. It then mentions some of the issues on which evidence was obtained and sets out a few of the results. This is followed by a brief outline of other matters considered important by teachers. Finally, the extent of teachers' views on one issue - the teaching of practical mathematics - is examined in greater detail.

2. The NICER Research Programme

This NICER research followed the communication of results from another research project. In September 1980 the Assessment of Performance Unit (APU) published Mathematical Development: Secondary Survey Report No.1,[2] an account of the first round of testing in a five-year programme for screening the mathematical performance of fifteen-year-olds throughout England, Wales and Northern Ireland. This report was immediately made available by NICER to teachers of secondary mathematics, for judgement on its contents.

This was an important development in educational enquiry, where the concerns of the curriculum can be argued from the standpoint of objective data rather than philosophical consideration. It meant, however, that the task was difficult because there was no model for such decisions. APU had simply provided numerous objective test results without permitting themselves to interpret these findings or to comment on what they meant. Our research demanded a set of value-judgements which would relate these facts to the somewhat different facets of a teacher's experience. We asked Northern Ireland teachers to set these results against their knowledge and experience of secondary mathematics.

Teachers' reaction was sought in two main stages. Seven discussion groups debated the report with no imposed guidance save being kept in touch with other groups through the minutes of their debates. Five groups were composed of teachers, and two groups of specialists in matheamtics education - teacher-trainers, advisers, psychologists, inspectors. The issues which these groups considered most important were followed-up through a questionnaire enquiry. To the views of 45 discussion group members can be added the questionnaire judgements of 330 teachers from 65 per cent of the post-primary schools and colleges in Northern Ireland.

Teachers wished to comment on both the APU survey and on many aspects of current practice in school mathematics. The APU results had dealt with an extensive range of mathematical content, and teachers were equally wide-ranging in their responses. Based upon objective evidence about many aspects of school mathematics, they suggested how it should be interpreted. Within the confines of this paper only a few of these arguments can be presented.

3. Views upon the APU Report

Teachers were asked to rate each of the six chapters of the APU report for usefulness and for interest. The distribution of their responses on a five-point scale is indicated by Table 1.

TABLE 1

TEACHERS' RATINGS OF CHAPTERS OF THE APU REPORT

(a) Usefulness

Rating / Chapter	(a) Very Useful	(b)	(c)	(d)	(e) Not Useful	(f) TOTAL	No Response	$\frac{(a+b)\quad(d+e)}{f}$
I (Review)	26	68	124	72	31	321	9	-0.03
II (Design, Data Collection)	31	94	100	77	18	320	10	0.09
III (Written Tests)	111	121	65	16	5	318	12	0.66
IV (Background Variables	35	96	109	59	17	316	14	0.14
V (Practical Tests)	71	113	83	31	13	311	19	0.45
VI (Survey Results)	57	97	102	36	11	303	27	0.35
TOTAL	331	589	583	291	95	1889	91	0.28

TABLE 1 (Continued)

(b) Interest

Chapter \ Rating	(a) Very Interesting	(b)	(c)	(d)	(e) Not Interesting	(f) TOTAL	No Response	$\frac{(a+b)-(d+e)}{f}$
I (Review)	32	84	104	73	24	317	13	*0.06*
II (Design, Data Collection)	31	94	105	68	22	320	10	*0.11*
III (Written Tests)	123	126	51	13	5	318	12	*0.73*
IV (Background Variables)	101	109	69	27	10	316	14	*0.55*
V (Practical Tests)	93	129	64	17	9	312	18	*0.63*
VI (Survey Results)	81	116	68	30	12	307	23	*0.50*
TOTAL	461	658	461	228	82	1890	90	*0.43*

(The figures in italics are indexes, each calculated from a distribution of ratings so as to help gauge overall strength of feeling on that issue. The index is derived by substracting 'negative' from 'positive' views, and correcting for the total number of views on that issue.)

In brief, the APU report was seen overall as useful and, to an even greater extent, as interesting. It is perhaps more significant that opinions varied on the usefulness of its written testing of separate parts of the report. APU's account of its written testing was valued most highly, whilst the review section which introduced the report was least liked (opinions here, however, followed a roughly normal distributuion across the five categories). Much the same shift of viewpoints was shown between usefulness and interest in the case of five chapters out of six. The exception, APU's breakdown of results in terms of the 'background variables' used to classify schools and children, was modestly rated for its usefulness but much more highly for its interest.

Discussions with teachers and free responses within the questionnaire enlarged upon the reasons for these ratings. It transpired that the APU survey was regarded as 'sensible' professionalism, testing that was stringent enough to be impressive and sufficiently realistic to be convincing. However, this principal view was qualified by unhappiness with various aspects of test design. In particular, teachers wanted different tests to be used for children of varying intelligence or of different mathematical backgrounds. They especially wanted to interpret each result in terms of whether or not children had been taught that topic. Views such as these must have affected ratings of the usefulness and interest of the report.

APU had used six background variables in order to classify pupils and to analyse the results of written testing. These variables were the level of a school's free meals, its pupil-teacher ratio, its size, the region of the country in which it was situated, whether its location is metropolitan or non-metropolitan, and the sex of each pupil. Teachers were asked to rate each background variable for usefulness and interest. These results are given in Table 2.

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TABLE 2

TEACHERS' RATING OF APU BACKGROUND VARIABLES

(a) Usefulness

Rating Background Variable	(a) Very Useful	(b)	(c)	(d)	(e) Not Useful	(f) TOTAL	No Response	$\frac{(a+b)-(d+e)}{f}$
% Free Meals	55	77	83	53	45	313	17	0.11
Pupil-Teacher Ratio	94	95	75	23	26	313	17	0.45
School Size	44	54	92	70	53	313	17	-0.08
Region	29	75	94	71	44	313	17	-0.04
Location	36	83	96	69	29	313	17	0.07
Sex of Pupil	38	62	116	54	42	312	18	0.01
TOTAL	296	446	556	340	239	1877	103	0.09

(b) Interest

Rating Background Variable	(a)Very Interesting	(b)	(c)	(d)	(e) Not Interesting	(f) TOTAL	No Response	$\frac{(a+b)-(d+e)}{f}$
% Free Meals	76	82	89	38	27	312	18	0.30
Pupil-Teacher Ratio	131	101	47	24	9	312	18	0.64
School Size	66	80	94	45	27	312	18	0.24
Region	85	93	76	43	14	311	19	0.39
Location	63	85	96	47	21	312	18	0.26
Sex of Pupil	78	79	85	44	26	312	18	0.28
TOTAL	499	520	487	241	124	1871	109	0.35

Within these comments, one variable was rated differently from all the others. Pupil-teacher ratio was regarded most highly on each measure. All of the variables were rated favourably for the interest which they engendered, but pupil-teacher ratio was seen as markedly more useful than any other. It may be that this was perceived as coming nearest to the reality of classroom concerns. Teachers' supplementary comments indicated that they regarded the APU data as being of social rather than educational significance, and they further pointed out that none of the APU variables is under a teacher's immediate control. The findings therefore cannot easily be interpreted so as to influence classroom provision, and this greatly limits their relevance to teachers' needs.

Teachers were also asked to suggest reasons for the apparent effects upon performance of each background variable. The APU report had provided mean test scores for the several categories of each variable, and these were available for each of the fifteen 'subcategories' into which mathematical content was split. For example, the performance of Northern Ireland children could be compared with those in other regions by inspecting a graph with five lines, each drawn through 15 points. Teachers were asked to comment upon these assocations between performance and the background variables. Their remarks were grouped under major headings, and only the principal suggestions can be included in this brief account.

In considering the association with free school meals, 73.6 per cent of teachers saw this positive relationship between affluence and performance in parental terms. It was as though they felt that the

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the same qualities as had resulted in economic security would be reflected in a child's success at school. 20.2 per cent of teachers indicated that the main difference revealed by pupil-teacher ratio, that the most favourable ratio is associated with the worst performance, was contrary to expectation. 25.5 per cent felt that this APU result reflected compensatory factors such as disadvantaged areas or remedial provision, whilst 18.5 per cent discussed such influences as co-operation or competition that might be enhanced in larger classes.

Size of school had not shown any effect upon the APU results, and 34.5 per cent of teachers made general comments such as "to be expected". 50.9 per cent put forward other explanations as being more important than school size, or else as balancing out between schools of different size. These included a few hypotheses of a 'swings and roundabouts' nature, for example that the discipline of the large school and the informality of the small school could each be advantageous. Performance had been seen to differ between regions, and socio-economic and vocational influences were held to be at work by 28.5 per cent of teachers. Educational differences were suggested by 37.0 per cent and it was evident that an established tradition in mathematics teaching and continuity in approach were valued, and indeed that these qualities were associated with education in Northern Ireland.

The better performance in non-metropolitan areas was equated by 24.5 per cent of teachers with a comparative lack of distractions and with greater freedom to study. 19.7 per cent of teachers even tended to wax lyrical in drawing verbal pictures of the quality of rural life, and these at times amounted to descriptions of rustic contentment among the adolescent population of the countryside. The slightly better performance of boys was described as a product of expectations or traditions by 27.3 per cent of teachers, while 37.2 per cent discussed the advantages of vocational preparation or the study of certain school subjects such as technical drawing or the sciences. 19.4 per cent of teachers were prepared to mention innate differences in ability, whilst only 7.6 per cent suggested different rearing experiences and differences in teaching and in school provision generally.

These comments cannot have been easy to make, insofar as they were drawn from APU evidence which teachers did not feel was particularly suited to their purposes. Though the testing programme was highly regarded and the survey arrangements were considered to be models of good and careful design, the outcome was difficult to put in the context of classroom realities. Teachers sought at all times for informtion of a diagnostic nature, for guidance on how to help individual pupils through better knowledge of children's strengths and weaknesses. In particular, they displayed an interest in what children seemed to find difficult among the APU tasks. There were indeed many indications that much of classroom teaching resolves to a search for error so as to eradicate it.

This focus on weaknesses in learning may well have coloured teachers' interpretations of the results for standards of children's performance. From the APU textual descriptions, teachers were asked to describe performance in each of the fifteen 'subcategories' on a five-point scale, from very poor to very good. The results are indicated in Table 3.

TABLE 3

TEACHERS' RATINGS OF SUBCATEGORY PERFORMANCE

Subcategory \ Rating	(a) Very Good	(b) Good	(c) Satis-factory	(d) Poor	(e) Very Poor	(f) TOTAL	No response	$\frac{(a+b)-(d+e)}{f}$
Number Concepts	5	23	30	5	1	64	6	0.34
Skills	3	17	27	15	0	62	0	0.08
Applications	3	10	35	13	0	61	5	0.00
Measure Unit	2	24	36	7	0	69	3	0.28
Mensuration	1	4	19	38	6	68	0	-0.57
Rate & Ratio	1	9	22	24	3	59	1	-0.29
Algebra General	0	7	27	37	0	71	1	-0.42
Traditional	0	5	26	37	0	68	2	-0.47
Modern	0	4	27	23	2	56	3	-0.38
Graphical	0	4	27	29	0	60	1	-0.42
Geometry Descriptive	2	10	36	14	1	63	2	-0.05
Modern	0	0	22	42	7	71	4	-0.69
Trigonometry	2	3	14	38	4	61	3	-0.61
Probability	3	8	33	17	1	62	4	-0.11
Statistics	0	5	30	21	1	57	3	-0.30
TOTAL	22	133	411	360	26	952	38	-0.24

This is a very different pattern of comment from those on the contents of the report, as in Tables 1 and 2. However, it would be wrong simply to infer that teachers thought more of the contents of APU's tests than of what they revealed. It should be stressed that, throughout their supplementary comments, teachers were principally committed to the encouragement of learning and the raising of standards. They sought to seek out error so as to adjust teaching accordingly, and they indeed seemed more concerned with what a child still had to learn than with what he had learnt. Therefore it seems likely that this assessment of the adequacy of children's performance was coloured by a tendency to focus on the 'problem' areas among the results.

Ratings of individual subcategories reveal considerable variation in how each was regarded. Performance was seen as particularly weak on topics such as trigonometry, which may not yet have been introduced to all fifteen-year olds, and in options such as modern algebra, which may not be widely taught. There was indeed great concern at poor levels of performance in all the algebras, and a feeling that the place of algebra and geometry within the curriculum has suffered in recent years. Basic attainments in number work were seen as stronger, and some comments conveyed a sense of relief that the results of an objective survey could now be used to reassure the most extreme public anxieties as to levels of basic attainment. These remarks, however, must be taken along with others which stressed the importance of a strong grounding in numeracy and facility in manipulation of number as the proper foundation for all further mathematics.

4. Other Results

This paper has set out a few of the results which were obtained in relation to the matters discussed - APU and its tests, the variables used to analyse data and their diagnostic possibilities, the standards of children's performance. The APU results were particularly broad in scope, covering all of the mathematics ordinarily taught to fifteen-year-olds. Teachers' comments were equally wide-ranging, and these covered the issues which they saw as of most concern in dealing with children and the curriculum. Some indication of the scope of the full NICER report can be gained by briefly indicating how certain of these issues were seen.

The public examinations were held to largely determine the curriculum. Being geared to identifying the ablest children, they create considerable demands on those of lesser ability and hence exert much pressure on teaching. The traditional/modern debate was seen as still alive through frequent references to a 'split' in the curriculum. The balance of opinion was that modern topics have failed to live up to their claims of conveying understanding more convincingly than traditional subject-matter.

The basics of mathematics were stressed in ways other than those reported earlier. Comments covered such matters as the importance of revision and reteaching at all levels of schooling, skills such as estimation and approximation which enhance accuracy, and the place of calculators in the classroom. The language of mathematics was seen as an important aid at all stages of problem-solving, and recommendations were made for agreement on a common vocabulary of essential mathematical terms which should be emphasised at all stages of teaching.

Learning of mathematics was often discussed through differences in patterns of performance - children's better facility in dealing with concrete quantities as opposed to abstractions, whole numbers instead of fractions. Regret was therefore expressed that 'social' mathematics and other topics such as algebra are somewhat out of fashion nowadays. Many of the teachers' concerns became apparent throughout the enquiry - feelings of isolation from the support of colleagues in meeting difficulties, problems of over-emphasising actual test scores in interpreting the wider meaning of APU's results. None of teachers' ratings differed with the ways in which they themselves could be classified, and it even seemed that some quality such as 'teacher opinion in general' was a characteristic of all teachers on tasks such as these.

5. A Discussion of One Issue

The results given here can only convey a flavour of the range of evidence presented in the main NICER report. Teachers' arguments were followed through by a discussion of their viewpoints and by an examination of some implications of their thinking. In conclusion, it might be helpful to take just one issue which teachers saw as important, and to present some of their arguments in slightly greater detail.

Practical assessments, as employed by APU, were included for the first time in a national programme for screening mathematical performance. Individual tests were administered by specially-trained teachers so as to follow a child's strategies through each stage of an ordered progression in problem-solving. All intervention by the tester was recorded, and was controlled in the form of permissible 'prompts'.

Table 1 indicates that the chapter describing the procedure and results of practical testing was regarded, in terms of both usefulness and interest, as second only to the account of the written tests. Teachers' comments, however, suggested that they were divided on two aspects of the merits of these tests. They alternatively saw the method as supportive or as inhibiting to the shy child. Also, they were doubtful as to whether prompting diminished the exactness of testing in an uncontrolled way, or if it was a sensitive and flexible adjunct to assessment.

There was enthusiasm for the adoption of practical testing as a classroom activity, except that there were many objections - a lack of materials and equipment, the problem of occupying other children during an extended test session, the shortage of time under normal classroom conditions. Practical testing was simply considered impracticable for classroom use. However, the procedure was seen as sensitive to all stages of a child's development and to his immediate needs for guidance. It brings out the method used by the child, rather than just the correctness of his answer. It highlights the difference between learning a definition and applying it, between skills and their extension to actual situations, and perhaps between knowledge and understanding.

Though practical testing was regarded with mixed emotions, the possibilities for practical teaching in mathematics were greeted with undivided enthusiasm. This was considered one of the most interesting parts of the whole report, and it was felt that definite mathematical demands had been incorporated in real and meaningful situations. It was as though teachers' imagination had been caught by the possibilities for getting back to the 'old' qualities of handling instruments, the skills of the mathematician-craftsman.

Teachers suggested that much of mathematics is best learned by actually doing it, as assimilation through the senses, the contribution of hand and eye to intellect.

The difficulties of introducing practical topics within the present theoretically-oriented curriculum are all too obvious, and yet the situation would change radically if practical assessment or project work were to be introduced to the public examinations in mathematics. For one thing, it might help to equalise the demands made upon children whose capacities for abstractions are quite irreconcilable. Any change in the emphasis of the public examinations is probably a matter of wider agreement between the many interested parties - schools, universities, parents and employers.

It would be difficult to list all the advantages which teachers associated with practical mathematics. It was not just the attractiveness of novel tasks in a subject often seen as dull and difficult, not just a suitability for children of whatever ability; not just the affording of insight into separate components of the process of learning; not just a simple matter of 'learning through doing'. Rather, it seemed as if teachers recognised the opportunity for a new sense of relevance and purpose for school mathematics. There would be opportunities for greater co-operation between teacher and child in a situation where practical tasks are the objective for a joint attack. Even as practical mathematics becomes an integral part of the curriculum, so there might develop habits of success and co-operative endeavour on tasks which are relevant to life.

Although teachers had argued that the APU survey was not designed to facilitate inference on the everyday concerns of schooling, they were willing to try and interpret APU's objective data against their own concerns. Here, they had taken the descriptions of children's performance on practical tests and commented on the place of practical mathematics in the classroom. On many other aspects of school mathematics, teachers made value-judgements on the APU evidence in terms of children's learning and the curriculum. For this reason, it was felt that the NICER report upon the interpretation by teachers of the first APU report on secondary mathematics could be made particularly relevant to classroom matters. We therefore chose the title of School Mathematics in Perspective.

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A STUDY OF THE MATHEMATICAL VOCABULARY OF PRIMARY SCHOOL MATHEMATICS TEXTBOOKS

Catherine Mulryan and John S.Close

Introduction

In the primary school the reading of mathematics textbooks is generally required of children from first class (6 - 7 approximately) onwards. The mathematics textbooks which are currently being used in the schools appear to make considerable demands on the reading skills of their readers. During the seventies, the textbooks changed in style and content, in response to the changes in primary education heralded by the introduction of the new primary school curriculum in 1971. In the earlier textbooks the content reflected a narrow arithmetic syllabus and consisted, for the most part, of worked examples and practice exercises. Children are now required to read mathematical exposition with substantial technical vocabulary. Their mathematics textbooks frequently require them to work on sections with minimal teacher direction. In spite of this new trend in the format and content of mathematics textbooks, no attempt has been made to examine them in a detailed systematic way and determine their suitability for those who are required to read them. The present study set out to examine the mathematical vocabulary of a sample of primary school textbook series as part of a more general analysis of these textbooks.

The Mathematical Vocabulary of Mathematics Textbooks

Particular attention has been devoted by many researchers to knowledge of mathematical vocabulary as a factor in determining success in mathematics (e.g. Hansen, 1944; Treacy, 1944). A comprehensive correlational study carried out by Johnson (1949) found correlations of .40 and .50 between scores on vocabulary and arithmetic tests. The result of these and more recent studies by Olander and Ehmer (1971) and Linville (1970) indicate that difficult vocabulary may create serious difficulties when encountered in mathematics texts. Cormack (1977) in a recent study of the vocabulary of a selection of British mathematics textbooks concluded that the difficulty level of the vocabulary of these texts frequently renders them "unusable" (p.16) for those who are required to read them. Campbell (1979) has also cited a study in which 74 per cent of the children in two primary schools said that they did not read the vocabulary of their mathematics books at all.

It appears that a large vocabulary load, coupled with the rapid rate of introduction of new mathematical terms, and insufficient repetition of these terms may be major factors contributing to text difficulty. On examining eight American mathematics textbooks used in grades one through three, Willmon (1971) found that children are introduced to approximately 500 new technical words and phrases during these grades, at a time when their total vocabulary is only about 4,000 words. Willmon also regarded the repetition of mathematical terms in the texts to be insufficient, with terms being repeated less than 25 times in a series. A more recent study by Horodezky and Smith-Weinstein (1981) on Canadian mathematics textbooks produced similar findings. It would appear appropriate and useful to carry out similar analyses of Irish mathematics textbooks series.

Purpose of the Study

The purpose of this study is to examine the vocabulary factors of a sample of mathematics textbooks currently being used in Irish primary schools. More specifically the study focuses on:

(i) The total number of running words in each textbook in each text series;
(ii) The total number of mathematical terms in each textbook in each text series;
(iii) The ratio of mathematical terms to all words (ordinary and mathematical) for each text in a series;
(iv) The rate of introduction of new mathematical terms in each text series.

Definition of Terms

Running words: Every printed word, ordinary or mathematical (including abbreviations of English words) appearing in a textbook will be considered as a running word.

Mathematical term: A mathematical term is a term which has a mathematical meaning in the context in which it is used.

New mathematical term: In any textbook, in any series a new mathematical term is a mathematical term which appears for the first time in that series.

Repetition: By repetition we mean any repetition of a new term in the text in which it is introduced whether or not the repetition is accompanied by explanation or development.

METHOD

Sample

Four series of primary mathematics textbooks, (designated as A, B, C and D in this paper) were selected from the six text series and four workbook series, currently being used in Irish primary schools. The four series chosen, are currently the most widely used mathematics series in the primary schools. Each of the series chosen consists of a set of six textbooks intended for use in the junior (1st and 2nd grades), middle (3rd and 4th grades) and senior grades of the primary school. Workbooks and other ancillary materials were not examined.

Procedures

The vocabulary data for each of the four textbooks was obtained by:

(i) Counting the total number of running words in samples of words from each textbook in each series (including abbreviations of English words);

(ii) Counting the total number of mathematical terms in samples of words from each text;

(iii) Listing and counting the new mathematical terms introduced in each text within a series;

(iv) Counting the number of repetitions of new mathematical terms in the text in which they are first introduced.

The total number of mathematical terms in each text was calculated by counting the number of words in a 20 per cent sample of pages randomly selected from each text. A similar procedure was followed to obtain the total of running words in each text. Test-retest reliability procedures were applied to measures (i), (ii) and (iii) above. The figures obtained indicated that:

(i) Differences between estimates of the number of new mathematical terms did not exceed 5 per cent, and that,

(ii) Differences between estimates of the number of mathematical terms and of the number of running words did not exceed 10 per cent.

RESULTS

Running Words: Table 1 shows the estimates of the number of running words by series and grade level based on the 20 per cent sample figures. These data indicate that there is a considerable variation in the total number of words, both across textbook series and within series.

TABLE 1

The number of running words by series and level

Grade Level	Series A	Series B	Series C	Series D
	20% Sample	20% Sample	20% Sample	20% Sample
1	943	2169	808	1449
2	1548	2604	1794	1924
3	1583	3009	2286	2000
4	2400	2873	2042	2232
5	3076	4840	2766	3250
6	4124	5201	3274	4894
TOTAL	13674	20696	12970	15749

Series B has considerably more running words than any of Series A, C or D. Further examination of Table 1 reveals major differences between series, when the number of running wrods at each level is considered. For example, at level 1 a child would encounter between 4,000 and 5,000 words in series A and C and 10,800 and 7,200 in series B and D respectively.

In all texts series the vocabulary load of the texts increases progressively from 1 to 6, except in the case of series B and C where there is a slight drop in total number of words at level 4. A considerable rise in vocabulary load occurs in all series at levels 5 and 6. Indeed, approximately 50 per cent of the total number of running words in each series (including abbreviations) is contained in the last two texts of the series.

Mathematical Terms

The data represented in Table 2 reveals that approximately one in every five words in each textbook is a mathematical term.

TABLE 2

Total number of mathematical terms by series and level

Grade Level	Series A	Series B	Series C	Series D
	20% Sample	20% Sample	20% Sample	20% Sample
1	202	300	154	258
2	295	435	292	320
3	370	613	420	403
4	385	644	542	444
5	500	1092	745	780
6	700	1104	832	1127
TOTAL	2452	4188	2985	3332

An examination of the data in Table 3 reveals considerable differences between text series in the total number of mathematical terms (including repetitions) which they contain. As in the case of total number of running words, series B emerges as the series with the highest number of mathematical terms overall, and also at each grade level, where it is surpassed only by series D at level 6. Series C has the lowest number of mathematical terms at levels 1 and 2 and series A texts contain the lowest number of mathematical terms of all the series for levels 3 to 6. In all series, there is a large increase in mathematical terms at levels 5 and 6. (These figures may be partly due to the greater use of abbreviations in senior grade texts).

TABLE 3

Ratio of all mathematical terms to all running words*

Grade Level	Series A	Series B	Series C	Series D
	20% Sample	20% Sample	20% Sample	20% Sample
1	1:5	1:7	1:5	1:6
2	1:5	1:6	1:6	1:6
3	1:4	1:5	1:5	1:5
4	1:6	1:4	1:4	1:5
5	1:6	1:4	1:4	1:4
6	1:6	1:5	1:5	1:4
	1:6	1:5	1:5	1:5

*Figures have to be rounded to the nearest whole number.

Within series however, some variations appear with the proportion of running words to mathematical terms being highest for grade levels 4, 5 and 6 in series A, for levels 1 and 2 in series B and D, and in level 2 and 3 for series C. In view of the number of running words within each text series this data suggests that the total number of mathematical terms within each text is quite high. This can be confirmed by inspection of Table 3.

Introduction of New Mathematical Terms

Within each text in each series, a number of the mathematical terms are terms which are being introduced for the first time within the series. Our data reveal considerable variation both across series and within series, in the total number of new or different mathematical terms introduced (See Table 4).

TABLE 4

Rate of introduction of new mathematical terms by series and level

Grade Level	Series A	Series B	Series C	Series D
1	135	138	112	109
2	48	40	34	44
3	62	118	73	86
4	42	59	54	58
5	119	179	147	113
6	91	117	88	65
TOTAL	497	651	508	475

It is clear from this data that substantially more mathematical terms are introduced in series B than in any of the other text series, i.e. 154 more than in series A, 143 more than in series C, and 176 more than in series D. Series D emerges as the series with the lowest overall number of new terms.

When the rate of introduction of new mathematical terms within each text series is examined, considerable variations between series become apparent. Text series B introduces more new mathematical terms at each level -

with the exception of level 2 - than any of the other three series. Differences between series in the introduction of new mathematical terms is least marked at levels 2 and 4.

A further examination of Table 4 reveals that the number of new mathematical terms introduced at level 1 does not differ appreciably between series A and B, and between series C and D. However, considerable differences emerge at levels 3, 5 and 6, although at level 6 the difference between series A and C is minimal. The greatest difference between series emerges at level 5. The distribution of new mathematical terms at this level is: Series A, 119, Series B, 179, Series C, 147, and Series D, 113. This means a difference of 66 new mathematical terms between Series B and D at this level.

The data represented in Table 4 also indicates that in all text series, proportionally more new mathematical terms are introduced at levels 1, 3 and 5 than at levels 2, 4 and 6. This is the case regardless of the actual number of terms introduced. This trend may be partly explained by reference to the official mathematics syllabus. The syllabus is divided into two year content blocks (1st and 2nd, 3rd and 4th and 5th and 6th grades). The trend emerging from our study would seem to indicate a tendency on the part of mathematics textbook authors to introduce the main content areas of the two year blocks in the first year of each block, and consequently a large proportion of the new mathematical terms, - and to spend the second year in the consolidation and redevelopment of topics. This might explain the tendency to introduce fewer terms at grades 2, 4 and 6.

An examination of table 5 indicates that appreciable differences exist between text series when the average

TABLE 5

Average number of repetitions of new mathematical terms by series and grade level

Grade Level	Series A		Series B		Series C		Series D	
	Average No. of repetitions	Standard deviation	Average No. of repetitions	Standard deviation	Average No. of repetitions	Standard deviation	Average No. of repetitions	Standard deviation
1	7	9	12	19	7	10	12	14
2	5	7	10	21	3	3	5	6
3	5	5	5	6	4	5	6	6
4	2	3	5	7	3	3	5	8
5	4	5	6		4	6	10	14
6	2	2	5	7	4	7	7	9
	5		7		5		8	

number (mean) of repetitions of new mathematical terms is considered. The average is highest for Series B and D. However, the average number of repetitions of new terms in all series, falls below 10. Within series the highest rate of repetition occurs at levels 1 and 2 in series B, and at levels 1 and 5 in series D. The lowest rate of repetition occurs at levels 4 and 6 in series A and at levels 2 and 4 in series C. The highest rate of repetition in all series is at level 1.

Discussion

The results of the present study support the view that the selection of mathematics textbooks for use in the primary school should involve a consideration of the readability of the textbooks viz-a-viz their general and technical vocabulary loadings. An examination of four of the most popular mathematics text series, currently in use in Irish primary schools reveals:

(i) Substantial variation in the number of running words within and across the series;

(ii) Substantial variation in the number of mathematical terms within and across the series;

(iii) A ratio of approximately one mathematical term to five running words in each series;

(iv) Substantial variation in the rate of introduction of new mathematical terms within and across each series, and

(v) Substantial variation in the rate of repetition of new mathematical terms within and across each series.

These results indicate that each of the four mathematics series studies, make considerable demands on the reading skills of their readers at all grade levels. Firstly, the total vocabulary load of the texts in each series and at each grade level appears very high, particularly when compared with the vocabulary load of English basal reading texts being used at corresponding levels in schools. For example, a widely used English basal reader, approved for use at grade level 1 for readers of average reading ability, has a total vocabulary load of approximately 3135 words. Children at this grade would encounter substantially more words in their mathematics textbooks: approximately 4,720 in series A, 10,850 in series B, 4040 in series C and 7240 in series D. At grade level 3 in the same series children would encounter approximately 9700 words in their English basal reading text, compared with 7920 (series A), 15,050 (series B), 11,430 (series C) and 10,000 (series D) in their mathematics texts. When we consider that approximately 20 per cent of all running words in those mathematics texts are mathematical terms, the significance of these figures is amplified.

Secondly, the rate of introduction of new mathematical terms in all texts in all series seems very high, especially in view of the very low rate of repetition of these terms within the text of their introduction. Whereas in most basal English reading series vocabulary is subject to careful control, both in terms of its introduction and repetition, the data emerging from this study indicates that this is not the case for mathematics textbooks. A comparision of the rate of introduction and repetition of new terms in the mathematics textbook studied with that of a popular

English basal reading series serves to highlight this point. Within the basal reading series chosen for examination, the rate of introduction of new words is carefully controlled, increasing gradually from books 1 to 6 (see Table 6). This is not the case for the mathematics textbooks studied (Table 4).

TABLE 6

Rate of introduction of new words in an English basal reading series, and repetition

Book	Number of new Words introduced	Number of repetitions in the series
1	47	56
2	50	54
3	64	50
4	120	44
5	197	34
6	322	20

Also, the repetition of new words within the English basal series is carefully controlled. Each new word is repeated a minimum of ten times within the text in which it is introduced, and it is repeated in all subsequent books in the series to give an average of 43 repetitions for each new word (see Table 6). In the case of the mathematics textbooks studied, the repetition of new mathematical terms occurs in an apparently unplanned and uncontrolled manner. In all series the average rate of repetition of new mathematical terms within the text of introduction is far below 10 (Table 5).

Further, the words introduced in the basal English series have been chosen with the aid of word frequency lists, so that much of the vocabulary of the texts will be familiar to their readers. This is not so in the case of mathematical vocabulary. In addition, the total word load of the English basal series examined is 800 words, compared with between 475 and 651 mathematical terms in the case of the mathematics series. Although approximately 80 per cent of the total running words in the mathematics series studied, are non-mathematical words, many of these words may not be encountered by the children during normal reading instruction. It is apparent from the findings of this study that readability factors have received little attention from the authors of the mathematics textbooks studied. It appears that the introduction and use of mathematical terms has been considered more in the light of syllabus coverage than in terms of readability.

Although all of the mathematics textbook series studied emerge as high in terms of the number of new mathematical terms introduced at each level, significant differences have emerged between series at each grade level. These differences indicate contrasting perceptions on the part of the authors as to the mathematical content appropriate at each level. The relatively low rate of repetition of mathematical terms in the texts indicate that some topics receive very little coverage in the text in which they are introduced.

Because of the differences that exist in the rate of introduction of mathematical terms between the four series examined, it is likely that problems will be encountered if changing from one text series to another. For example, a change from Series A level 5 to Series B level 5 would mean that 68 terms not encountered in the first series, may have to be learnt in order to deal effectively with the content of the new series. These differences have important implications in the case of children changing from one school to another, and for teachers wishing to make use of more than one mathematics text series in the classroom.

Conclusions

The findings which have emerged from our study of the four mathematics textbook series, have indicated that readability factors in these texts are far from ideal, so that for many children the ability to read these texts independently may never become a reality. It is important for primary teachers to become aware of the vocabulary features of mathematics textbooks. This knowledge also can aid them in the selection of mathematics textbooks and will also draw their attention to the need to provide a range of supplementary activities and strategies to consolidate the mathematical vocabulary introduced in the textbooks of all the series studied. The mathematics textbook series examined in this study are in widespread use in Irish primary schools at the present time, and the indications are that this is likely to be the case for some time to come. Providing that teachers are aware of the deficiences of these texts and take steps to overcome them, their role as teaching aids can be considerably improved.

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IN PRAISE OF ORAL LITERATURE

Thomas G.Mullins

Traditionally school curricula in English have been largely concerned with the reading and analysis of art-literature. Invariably the stated objective of these studies has been the nurturing in the pupil of a life-long appreciation of literature, an admirable educational objective. It would appear, however, from the nature of popular taste in reading, evidenced by the lurid display in bookshops, the miniscule sale of books of poetry and the half-empty theatres that our efforts to foster a love of 'the best that has been thought and written' have not been as successful as we would have wished. It is the 'literature under the desk', with such heart-warming titles as *Once is not Enough* and *Orgy of the Virgins* which claims the sensibilities of our pupils both in school and afterwards in adult life.

There are manifold reasons for this apparent failure in the teaching of literature. Commercial exploitation of our young people by the entertainment business and sociological and economic pressures for examinations results all exact their price; in the short-term, teachers can have little hope of overcoming these. But there are other negative factors within the educational system itself which can be changed and it is within teachers' power to effect these changes.

With the onset of universal literacy a grandiose assumption was made by the curriculum planners that once pupils became literate they would inevitably wish to become litterateurs, dedicated to the reading, analysis and assessment of literature. Consequently in school they were presented with various abridged forms of the 'great traditions' of English literature. For most pupils this encounter bred frustration and boredom: the language of these works was largely incomprehensible to them and the sophistication of thought and feeling was alien to their sensibilities. The projected educational process, the integration of high-culture and the masses, became profoundly mis-educational.

While the content of the curriculum was unfortunate, the methodology generally adopted appears to have been disastrous. Pupils were not taught how to approach a a literary work, they were not taught how to read a poem, novel or play but rather how to analyse it for academic ends. In short they were introduced to 'talk about literature' rather than being introduced to the literature itself. As a result pupils were unable to re-create the literature for themselves; they looked past the verbal artifact itself to its techniques and literary creations rarely became living presences for their sensibilities. Furthermore, they inevitably adopted the same literal stance for reading literature that they would use for reading a newspaper or a science text-book; the poetic was effectively made prosaic and literature's potential for offering a specific kind of educational experience was thoroughly emasculated.

In truth, literature as an art-form hasn't been given much of a chance in the classroom. In the future, if we are to avoid 'an abridgement of hope' in literary education, a curriculum is needed which recognises the reality of the child's sensibility and cultural situation and seeks to build on these; a methodology is needed which releases the dynamism of literary creation to do its work on young unformed sensibilities. This paper seeks to make some contributions towards forming this new desirable construct for literary education.

II

The identification of literary experience with reading and writing is a relatively recent development in the history of the human race.

> The connection between literature and writing is accidental, and belongs to a secondary phase in the history of literature. [1]

For thousands of years literary experience consisted of a shared response to an oral performance.

The folk literature of all countries is a rich reservoir of poetry, song and story. This oral literature was created over the centuries by countless non-literate generations expressing their instinctive and symbolic response to life's experiences. In the contemporary world this oral traditon has largely died out but the literary achievements of its past, although admittedly bereft of their pristine impact, are captured in written form. Yet even in print these literary forms retain vibrant qualities in language and symbolism: as a source of popular literary experiences they would seem of unrivalled potential.

Oral literary experiences were intensely dramatic and accessible to all. The communal experience involved a reciprocal relationship, a mutual act of re-creation which gave great vigour to the occasion. The experience of words was immediate and sensuous: the sound of the words, the syllabic texture of the verse, the tone of voice, the rhythm of the recital all gave a concrete emotional life to the language:

> Speech was delivered with great penetrative power by the poet's whole body to the learners who directly confronted him and reached their feelings more immediately and more deeply than the written word. [2]

Reading a poem today may deeply move but one is rarely 'carried away' by the experience. In the oral tradition the audience became passionately involved in the world of make-believe, they forgot themselves and the secondary world of the poem or story became their immediate reality. The following account of the performance of a Russian minstrel gives some indication of the intensity of these literary experiences;

> Utka coughed. Everybody became silent. He threw his head back and glanced around with a smile. Seeing their impatient eager looks he began at once to sing. Slowly the face of the old singer changed... Something inspired appeared in it... He grieved with Ilya of Murom as he sat paralysed for thirty years, gloried with him in his triumph over Solovey the robber. All present lived with the hero of the ballad too. At times a cry of wonder escaped from one of them, or another's laughter rang through the room. From another fell tears, which he brushed involuntarily from his lashes. They all sat without winking an eye while the singing lasted. Every note of this monotonous but wonderfully gentle tune they loved. [3]

Because oral literature is the creation of the illiterate it should not be thought naive and narrow in its awareness. The themes of oral literature are central to human life '-birth, growing up, courtship, marriage, work, adventure, old age and death, the place of man in the universe and his relations with his god'. [4] This literature, (which was predominantly in verse), is the work of men speaking to men. It appeals to us as human beings and not as students of literature. It reaches across all barriers of race and nationhood and relates directly to man's psychic need for order in this world,

> Rude and beautiful poetry that is filled with the oldest passions in the world. [5]

As David Daiches comments on the oral tradition:

> Illiteracy has its compensations. It is good for the memory and strengthens the imagination. People who depend entirely on an oral tradition will tend to cultivate an ear for the memorable and a taste for figures of speech ... though they may not have access to the greatest literature, at least they will be the custodians of an art that comes home to their ... bosoms and within the limit of that they will recognise and encourage integrity and vitality. [6]

The most literary of all modern poets, T.S. Eliot, has expressed the desire for an audience for poetry who were illiterate:

> I myself should like an audience which could neither read nor write. The most useful poetry socially is that which could cut across all the present stratifications in public taste ... the ideal medium for poetry to my mind ... is the theatre. [7]

These ideas do not imply that illiteracy is a better state than literacy. They stress that the experience of literature works powerfully as an aural experience. They explode the assumptions of those who would wish to confine the experience of poetry to the private reading of the slim volume or to the study of the text-book.

Besides its inherent literary quality there is another reason for expanding the role of oral literature in the classroom: it has the ability to bridge the cultural dichotomy that has existed between the literary experience of the school and the literary experiences of the outside world. Folk literature because of its simplicity of vocabulary, directness of emotional appeal and faithfulness to concrete experience relates directly to the dominant traits in mass-culture today. The ingredients of popular entertainment are present in both: the universal narrative elements of love, betrayal, violence, mystery, and death all play their roles. Mass culture relies heavily on the spoken word: although the visual impact of television is inescapable it does employ commentary and dialogue: the widespread popularity of radio, records, and cassette tapes, emphasises the significance of aural experiences in modern culture. Therefore the adolescent has an habitual cultural stance, a structure of attention towards the spoken word, which literary education could utilise for its own ends. The oral discipline which shaped folk literature makes it admirably suited for use in the present cultural context.

Most adolescents will have first hand experience of an oral tradition amongst themselves. The Opies have shown in The Lore and Language of School Children[8] the diversity of roles that verse plays in the lives of children and adolescents. Words and phrases are shaped into meaningless sound patterns (nonsense verse); lines

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and rhymes are changed in hymns and songs to surreptitiously offend the adult world; insults, rules for games, gang slogans, all are versified. While many of these verses are centuries old in format they are adapted and modified to suit contemporary needs. They form a living tradition of verse which has all the characteristics of folk-literature, communal authorship, adaptability to local needs and oral presentation. It celebrates the raw facts of living with gusto and excludes nothing; in this it contrasts to the tradition of wan children's verse sanctioned by adults. Although quite unsophisticated in thought this underground tradition demonstrates clearly that children and adolescents have ears attuned to verbal patterns in verse; in their multifarious forms, these verses are an important element of cultural order in their lives. The magic of the word, the charm of the verse, have an authority which few care to challenge.

It would seem an imperative that education should acknowledge this tradition of literary experience and seek to build directly on it. The most obvious progression would be into the tradition of folk verse as the pupil will feel at home with its format and non-intellectual stance.

Finally the distinct advantage of folk verse in an educational context is that it requires no literary consciousness to facilitate response. The pupils can relate quickly and directly to the experience created in the words. They can savour the felicitious phrase and reread the poem for themselves repeatedly without losing their way in complexities of thought or metaphor. Folk-verse invites the pupil into re-creation; that is its distinct advantage for literary education.

Much folk-verse is intimately related to music and dance. It was in the performance of these songs that individuals or the whole community, either in celebration or sorrow ritualised and ordered their inner worlds; the mingled rhythms of sounds, words and physical movements released the inner tensions and restored calm:

> Songs are used as a means of turning experiences which are painful, shameful or otherwise undesirable into a subject or art which enhances one's inner pride and recognition by society. The indignities of prison life... the insult of rejection by a girl, or of divorce imposed on a loving partner, the misfortunes of illness and maybe of disablement ... are examples of themes which it is better to sing about than brood over. [9]

Adolescents delight in rhythmic physical movement and choral singing, thus these songs provide rich educational opportunities. The adolescent can become fully involved in the recreation of the emotional experience; the pain, the joy, the tension, the release become his own; the poetic form is realised in a truly dynamic aesthetic.

Work-songs are of particular moment in this context. There is a remarkable similarity between the rhythms of these songs and the rhythms of the work-tasks with which they are associated. The drawling rhythms of sea-shanties such as 'Blow The Man Down' and 'What Shall We Do With The Drunken Sailor' suggest vividly the physical activities of raising anchors and hoisting sails; the staccato rhythm of the magnificent weaving-song 'Poverty Knock' suggests the ceaseless monotonous movement of the factory looms. There is an immense range of these work-songs available relating to a wide diversity of work-tasks:

> (there are songs) for hoeing, weeding, mowing, launching a boat, sowing, hauling in fish-nets ... there are domestic and solitary songs for women grinding corn ...; there are gang songs for pulling trucks, for road work, for factory hands, for miners. 10

No matter how remote the work-task may be from the experience of the pupils the forceful rhythm and the feelings expressed about work in the verbal pattern find a ready and sympathetic response.

The ballad is another traditional form which appeals strongly. The element of narrative, added to the characteristic immediacy of language, makes this form most attractive; the pattern of tension, crisis, resolution achieved so quickly and neatly delights the impatient adolescent imagination. Furthermore, these poems more than meet the adolescents half-way in their demand for 'action'. The Border-Ballads have been described as,

> ...strange and melancholy tales of love and hate and longing, of thieving and killing, of jealousy, incest, witchcraft and revenge. [11]

Despite their themes of violence and crime the final impact of ballads is 'one of inward dignity, or grief and love felt deeply upon the pulses, of delight and vitality in the teeth of every kind of suffering and of resignation to the nature of things. They not only depict all this: they enact it'.[12]

These tales of love and violence contrast revealingly with their commercial counterparts of today. The linguistic restraint and moral stance evident in this traditional verse can be used in the classroom to highlight the indulgent sensationalism and sentimentality of the popular 'thriller'.

The resources of folk literature open up a wide prospect of literary experience largely neglected in the post-primary school. Their variety of form, simplicity in thought yet richness in emotional and symbolic impact make them admirably suited for providing educative literary experiences throughout the post-primary school for all levels of ability. Folk-literature makes literary experience available to many who might have been discouraged by their experience of 'art-literature':

> ... the ready accessibility of pre-literate poems should win them readers who are discouraged at the threshold of modern poetry. They could help to promote the true literacy that we lack, not merely a verbal softening-up that takes a quick impression from ads and headlines. Poetry is not just a form of expression that one takes up in drops, but the satisfying of a deep human need that is thwarted by verbal inadequacy. [13]

It is obviously desirable that the curriculum in post-primary schools should re-orientate itself to include much traditional folk-literature. This literature has helped to impose order on the lives of countless people with its powerful symbolic patterns: it could fulfil the same role in a society which is fast losing any meaningful cultural symbolism.

III

This emphasis so far on oral-literature does not imply an under-valuing of the role of art-literature in education. The experience of art-literature should grow out of the encounter with oral-literature and the curriculum should be planned so as to foster this growth. Furthermore, the initial encounter with the oral tradition will emphasise certain aspects of all literary creation which have been generally underplayed in education.

As previously mentioned the traditional methodology for teaching literature tended to be conceptual and analytical. It neglected the sensuous elements present in any integral literary encounter. The oral and the aural dimensions of literary recreation ever-present in the oral tradition are equally essential to the proper reading of art-literature and teachers at all levels should grandly orchestrate them in presenting literature to their pupils. As Robert Penn Warren remarks:

> Literature wants to be spoken... any good poem wants to be read, out loud, and any good piece of fiction. 14

Literature and most specifically poetry uses language at its most intense. Poetry is made not with words as expression of ideas but with what Mallarme called 'words themselves', words as sensuous events, words as the sounds that convey them. At the most fundamental level a word is an oral shape; the lips, tongue, teeth and palate are all involved in the forming of a word and this exercise in shaping creates an intimate tactile sense of verbal texture. Thus the feel of these lines is the concentration of an emotional stance; a king of oral enactment of an attitude:

> Yet let me flap this bug with gilded wings,
> This painted child of dirt, that stinks and
>   stings;
> Whose buzz the witty and the fair annoys,
> Yet wit ne'er tastes and beauty ne'er enjoys.
>
> (A. Pope - Epistle to Dr.Arbuthnot)

Pope's verse, the hard spitting quality of the consonants and slender vowels enacts in the mouth an unmistakeable sense of the despicable and the distasteful.

In contrast, this poem by William Carlos Williams achieves quite the opposite effect.

This is Just to Say

I have eaten
The plums
that were in
the icebox

and which
you were probably
saving
for breakfast.

Forgive me
they were delicious
so sweet
and so cold.

The last lines relax into gustatorial indulgence - the soft flesh of the cool plums is agreeably alive on the taste buds. In fact Williams likened poetry to a dance, a sensuous ordered movement of verbal forms.

Even, a poet as intellectual and sophisticated as T.S. Eliot, in The Four Quartets achieves a sense of convoluted speculation and anxious striving in the intricate syllabic texture he presents in the following passage:

To communicate with Mars, converse
with spirits,
To report the behaviour of the sea-monster
Describe the horoscope, haruspicate or scry,
Observe disease in signatures, evoke
Biography from the wrinkles of the palm
And tragedy from fingers; release omens
By sortilege, or tea-leaves, riddle the
inevitable
With playing cards, fiddle with pentagrams
Or barbituric acids, or dissect
The recurrent images into pre-conscious
terrors -

(The Dry Salvages lls. 184 - 193)

Words can also be considered as an aural-experience, a shape in sound. While this is obviously intimately related to the oral-shape it can be treated as a distinct phenomenon. Robert Penn Warren declared roundly 'No sound, no poetry'. [15] Some poets have considered sound so essential to their verse that they have sacrificed much else to get it right. Dylan Thomas and Edith Sitwell would typify this approach. But poets less eccentric than these also play extravagantly with the music of words to achieve their poetic purposes. Hopkins creates the immense strength of the blacksmith, Felix Randal, when he intones:

> How far from then forethought of,
>   all thy more boisterous years,
> When thou at the random grim forge,
>   powerful amidst peers,
> Didst fettle for the great grey drayhorse
>   his bright and battering sandal.
>
> (G.M.Hopkins Felix Randal)

Here the explosive consonants, the loud broad vowels, and the rattle of such words as 'random' and 'fettle' create the iron reality of the forge and Felix Randal's control over it.

Shakespeare seeking to create the sense of tangible evil in which Macbeth lives weighs his verse down with sounds that drag at our ears:

> Light thickens, and the crow
> Makes wing to the rooky wood;
> Good things of day do droop and drowse,
> While nights black agents to their preys
>   do rouse.
>
> (W.Shakespeare - Macbeth Act 3,Sc.II, lls.49-53)

Finally the oral presentation of literature is essential if the element of rhythm is to be encountered by the pupils in any significant way. Rhythm lies at the heart of any good writing. John Montague has defined poetry as 'rhythmic insight';[16] I understand this to mean the satisfying imitation and ordering of feelings in an aesthetic verbal movement. Rhythm seeks to imitate (in the Aristotelian sense) the ebb and flow of the inner world of feeling and only a good audible reading will realise this dimension for the inexperienced reader. This poem by John Berryman makes this point dramatically clear.

> Filling her compact and delicious body
> with chicken paprika,she glanced at me
> twice.
> Fainting with interest, I hungered back
> and only the fact of her husband and four
> other people kept me from springing on her
> or falling at her little feet and crying
> 'You are the hottest one for years of night
> Henry's dazed eyes
> have enjoyed, Brillance'. I advance upon
> (despairing) my spumomi. -Sir Bones: is stuffed
> de world, wif feeding girls.
>
> Black hair, complexion Latin, jewelled eyes
> downcast.. The slob beside her feasts...
> what wonders is
> she sitting on, over there?
> The restaurant buzzes. She might as
> well be on Mars.
> Where did it all go wrong? There ought to
> be a law against Henry.
> -Mr.Bones: there is.
>
> (John Berryman Dream Songs 4)

So far I have deliberately avoided mentioning the meaning of words in poetry. This of course will be always powerfully operative, (as will the devices of imagery). So trusting in the normal function of language the teacher should emphasise the poetic qualities of texture, harmony and movement before there is too much concern about meaning. Ironically by adopting this approach he will be charging the poem with even more significance: the pupils will gradually encounter a meaning rather than having it explained to them in reductionist literal terminology.

In this context T.S.Eliot has remarked that meaning in a poem is a kind of deliberate distraction.

> The chief use of meaning in a poem, in the ordinary sense, may be to satisfy one habit of the reader to keep his mind diverted and quiet, while the poem does its work on him, much as the imaginary burglar is always provided with a bit of nice meat for the house-dog. [17]

In primary and post-primary education poetry should be encountered as a form of verbal enactment: indeed all forms of literature should be seen as a form of verbal enactment. While this is self-evident in relation to drama, as drama exists as itself only in performance, it may not be so evident in the context of fiction. Today the experience of reading fiction tends to be identified almost totally with the silent, individualised reading of a novel. But it is only in this century that the tradition of reading novels aloud to a group has waned, although it survives in an attentuated form in radio serialisations which are immensely popular. It should be the intention and delight of every English teacher considering the privileged communal context in which he operates to keep alive this tradition of story-telling by reading aloud as much of fiction as he possibly can. His dramatisation of the characters will add imaginative and emotional dimensions to the fictional world which the inexperienced young reader would have failed to animate.

Aristotle suggests in The Poetics that a work of art should have the reality of 'a living organism'. [18] The aspects of poetry and literature generally emphasised here are those which give a vibrant sensuousness and a reality of feeling to any literary encounter. It is only by repeated oral-performance both by teacher and eventually by pupils that these aspects can be made to operate powerfully. It is to be hoped then the pupils will come to appreciate the true nature of a literary experience and grow to cherish what it offers them.

Robert Penn Warren says all when he declares:

> Unless we some way recapture in the classroom the physical feel of literature as something spoken, and get beyond the endless abstractions *about* literature and I know not what else, the teaching of literature is just on the skids. [19]

NOTES

1. H.M.Chadwick and M.K.Chadwick, *The Growth of Literature*, Vol.iii (Cambridge University Press,1969), p.xi.
2. D.Thompson, *The Uses of Poetry*, (Cambridge University Press, 1979), p.90.
3. H.M.Chadwick and M.K.Chadwick, *The Growth of Literature*, Vol.ii, pp.240-241.
4. D. Thompson, 'Poems before Print', *The Use of English*, XXVII(2), Spring, 1976, p.10.
5. J.M.Synge, *Collected Works* - Vol.ii - Prose,(London: Oxford University Press, 1966), p.112.
6. D.Daiches, *A Study of Literature*, (London: Oxford University Press, 1968), p.20.
7. T.S.Eliot, *The Use of Poetry and the Use of Criticism*, (London: Faber, 1964), p.152.
8. Iona and Peter Opie, *The Language and Lore of School Children*, (London: Paladin, 1977).
9. Francis M. Deng, *The Dinks and their Songs*, (London: Oxford University Press, 1973), p.79.
10. Ruth Finnegan, *Oral Literature in Africa*, (Oxford: The Clarendon Press, 1970), p.231.
11. James Reed, *The Border Ballads*, (London: 1973), p.7., quoted in D. Thompson, *The Uses of Poetry*, p.64.
12. R. O'Malley, 'Ballads, Condescension and Humility', *The Use of English*, XXVI(2), Winter, 1974, p.162.
13. D.Thompson, 'Poems before Print', p.14.
14. W.C.Forrest and C.Novelli, 'The Oral Roots of Literature. An Interview with Robert Penn Warren', *Sewanee Review*, LXXXIX,3, Summer, 1981,p.329.
15. Ibid., p.315.
16. In conversation with the author.

17. T.S.Eliot, The Use of Poetry and the Use of Criticism, p.151.

18. Aristotle, The Poetics, IX.4.

19. W.C.Forrest and C. Novelli, 'The Oral Roots of Literature', p.331.